5-5420-212-12

TM 5-5420-212-12

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL

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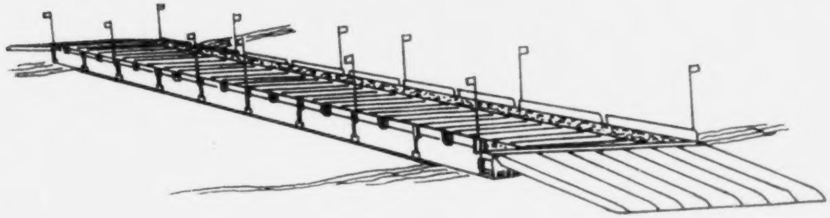

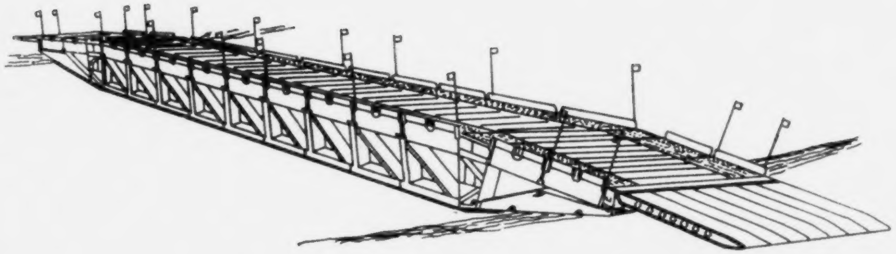

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MEDIUM GIRDER BRIDGE (MGB)

NSN 5420-00-172-3520

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E-1 and E-2	E-1 and E-2

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2-149 through 2-152	2-149 through 2-152
2-155 through 2-158	2-155 through 2-158
2-161 through 2-164	2-161 through 2-164
2-167 through 2-170	2-167 through 2-170

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WARNING

DEATH

or severe injury to personnel and damage to property may result if personnel fail to observe safety precautions.

Use extreme caution when connecting bridge bays. Make sure of secure footing to prevent severe injury or death to personnel.

Exposure to hydraulic oil under pressue is hazardous. Exercise appropriate safeguards when working with pressurized systems.

When disconnecting any hydraulic line, open line slowly and protect face. Hydraulic oil can spray out due to residual pressure in system.

Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100 degrees F to 138 degrees F (38 degrees C to 59 degrees C).

Do not perform maintenance on the equipment while traffic is on bridge.

During loading and unloading of pallets, be sure that all personnel are clear before throwing the straps across the load.

During bridge assembly and disassembly, before removing captive pins to change heights, a panel pin must be placed through the nose roller and launching nose to prevent the nose from rolling.

When using compressed air, wear safety goggles or glasses and ensure air blast is not directed toward another person.

WARNING

Improper welding of MGB components can result in death from toxic fumes or explosion of components. In addition, components can be weakened through improper welding.

Welding of non-stressed components can be done at Organizational Maintenance level. Welding of stressed and/or sealed components will only be done at Depot level, or at Manufacturers repair facilities.

TECHNICAL MANUAL

No. 5-5420-212-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 18 April 1985

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL

MEDIUM GIRDER BRIDGE (MGB)
NSN 5420-00-172-3520

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

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HOW TO USE THIS MANUAL

This manual, TM 5-5420-212-12, is written to cover all levels of expertise in the use and operation of the Medium Girder Bridge (MGB).

Any user will find that complete reading of this manual is not necessary (though advised) in order to construct any length or configuration of MGB. This applies primarily to the operation instructions in Chapter 2.

The operation instructions are written so that procedural steps are provided for every length and configuration of bridge.

The following are examples provided to explain how users with different levels of expertise should use this manual.

EXAMPLE 1. An inexperienced user (in the use of the MGB) is given the mission to supervise construction of a 2E + 10 bay MGB (on a normal site).

The user is advised to prepare by reading the appropriate procedures thoroughly before moving to the bridge site.

Since the mission is to construct a 2E + 10 bay double story (on a normal site) the user must go to paragraph 2-25, Section III. This paragraph covers construction of all double story bridges on normal sites. Being inexperienced the user will have to use the Step by Step procedures which begin on page 2-441, after he reads the Assembly - General (paragraph 2-24, pages 2-439 and 2-440).

Of course, the user should read the parts of Sections I and II that will be required prior to construction. For example, if the user will have to participate in the site selection, reconnaissance, and palletization, then these paragraphs should be reviewed. Also, the user should read paragraphs 1-6 thru 1-8 to become familiar with the MGB components.

To start actual construction, the user will start with Step 1.a.(1) and perform only those steps required for the length of bridge being constructed. The rule to follow is:

Perform the steps in order until a "PROCEED TO" is found that applies to the bridge being built, then follow the "PROCEED TO" instructions.

In this example, Steps 1.a.(1) thru (15), 1.b.(1) and (2), and 2.a.(1) thru (40) are performed before a "PROCEED TO" is reached that pertains to a 2E + 10 bay bridge.

HOW TO USE THIS MANUAL (CONT)

After Step 2.a.(40), the user is instructed to "PROCEED TO" Step 2.a.(43) for 2E + 8 thru 2E + 10 bay bridges. The user will follow the "PROCEED TO" instructions, proceeding immediately to Step 2.a.(43). The user will not perform Steps 2.a.(41) and (42) as they pertain to other bridge lengths. Following the rule, the user performs Steps 2.a.(43) thru (45), skips Step (46), and performs Steps (47) thru (53).

In the procedures, the user will come across Steps or NOTES that describe more than one method of performing a procedure. The user will choose the method to be used and proceed to the appropriate step.

Continue construction, following the rule until the bridge is completed.

EXAMPLE 2. An inexperienced user (in the use of the MGB) is given the mission to supervise construction of a 2E + 10 bay MGB, with a 5N1 launching nose (on a restricted site).

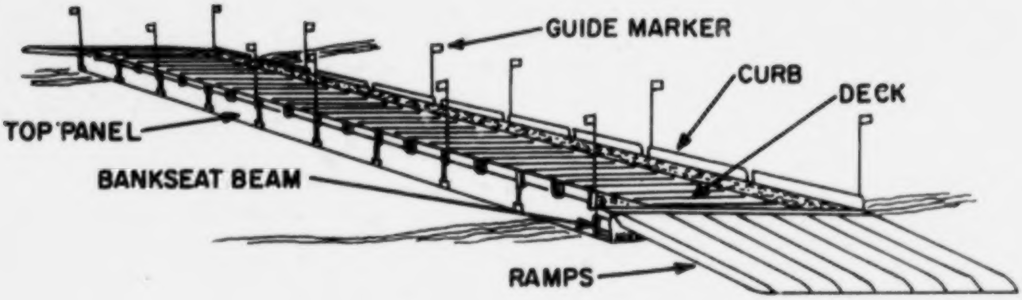
Again, the user is advised to read the appropriate paragraphs in Sections I and II and paragraphs 1-6 thru 1-8 that will be required prior to construction.

The user in this example must start in paragraph 2-28, as the mission is a 2E + 10 bay on a restricted site. In this paragraph on page 2-602, the user is instructed to "PROCEED TO" paragraph 2-25 and to perform Steps 1.a.(1) thru 2.a.(23). Upon completion of these procedures the user must return to paragraph 2-28 (page 2-602) and continue construction by reading the next item. Since this is a "PROCEED TO" that applies to a 2E + 1 bay, the user skips this and reads the next item. This instructs the user to "PROCEED TO" Step (24). The user performs Step (24) and continues reading and performing steps in order until another "PROCEED TO" is found.

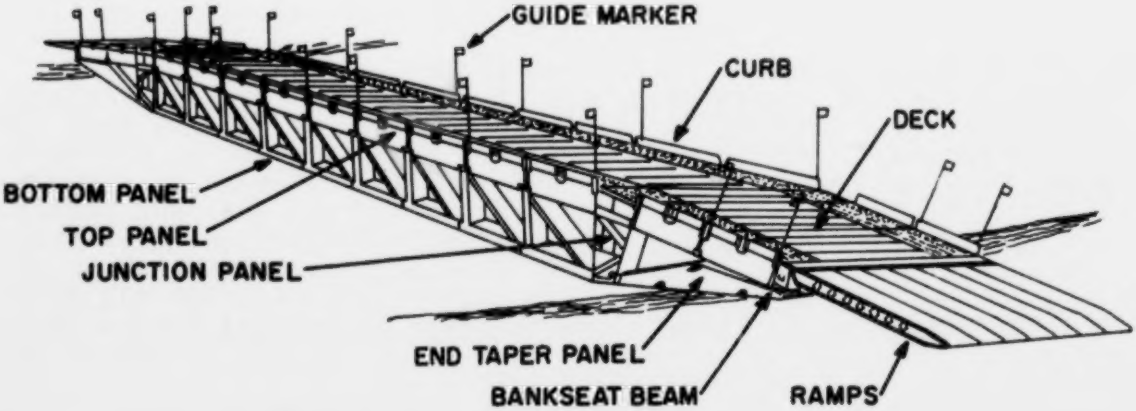
Since, in most cases, there are two lengths of launching nose for each bridge length, the user is advised to be extra careful when a "PROCEED TO" is reached. Ensure that the length of nose is checked, as a 2E + 10 bay, w/5N1 is not constructed the same as a 2E + 10 bay, w/6N1.

Continuing construction, the user completes Step (27) and is instructed to perform Steps 2.a.(28) thru (36) of paragraph 2-25. Do exactly that, then return to page 2-603 and continue reading.

Remember, perform steps in order until a "PROCEED TO" or instructions are reached that instruct the user to proceed to another step or paragraph.



A. SINGLE STORY MGB



B. DOUBLE STORY MGB

FIGURE 1-1. BRIDGE CONFIGURATIONS

CHAPTER I
INTRODUCTION

SECTION I. GENERAL

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Maintenance Forms and Records	1-2	1-1
Reporting Equipment Improvement	1-3	1-2
Hand Receipt	1-4	1-2
List of Abbreviations	1-5	1-2

1-1. SCOPE.

a. This technical manual is for use in installing and maintaining the Medium Girder Bridge (MGB). Instructions provided cover assembly, disassembly, loading, transporting, off-loading, preventive maintenance checks and services, troubleshooting, lubrication and maintenance procedures as allocated by the Maintenance Allocation Chart. Component descriptions and their relationship to the MGB are also included; refer to Figure 1-1 and Paragraph 1-7.

b. Appendix A contains a list of reference publications that apply to this manual. Appendix B contains the Maintenance Allocation Chart (MAC). Appendix C contains a Component of End Item and Basic Issue Items Lists. Appendix D contains an Additional Authorization List, which provides information on items and materials authorized for use with the MGB and LRS. Appendix E contains an Expendable Supplies and Materials List.

c. Instructions and information pertaining to the M817 truck and the M796 trailer used as transport equipment for the MGB, are contained in TM 9-2320-260-10 and TM 9-2330-287-14; these manuals should be used when performing lubrication, preventive maintenance, troubleshooting, and maintenance on the truck and trailer.

1-2. MAINTENANCE FORMS AND RECORDS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

1-3. REPORTING EQUIPMENT IMPROVEMENT.

RECOMMENDATIONS (EIR'S). If your MGB needs improvement, let us know.

Send us an EIR. You the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on a SF 368 (Quality Deficiency Report). Mail it to us at Commander, US Army Troop Support Command, ATTN: AMSTR-QX, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. We'll send you a reply.

1-4. HAND RECEIPT.

Hand receipts for Components of End Item (COEI), Basic Issue Items (BII) and Additional Authorization List (AAL) items are published in Hand Receipt manuals, SC5420-97-CL-E52-HR (Bridge Set), SC5420-97-CL-E53-HR (Erection Set) and SC5420-97-CL-E56-HR (Link Reinforcement Set). This manual is published to aid in property accountability and is available through: Commander, US Army Adjutant General Publication Center, 2800 Eastern Boulevard, Baltimore, MD 21220.

1-5. LIST OF ABBREVIATIONS.

A = Junction panel in far bank end of bridge

AA = Anchor assembly, component in link reinforcement set

B = Top panel in the far bank end of bridge, on the bank side of the junction panel

BP = Bottom panel. This will also be found with number following BP: Examples:

BP1, BP2, BP3 .... Describes the bottom panels in the first, second, third bay of bridge.

BP = Building pedestal

C = Top panel in the far bank end of bridge, on the bank side of the bankseat beam

CRB = Capsill roller beam

D = Junction panel in near bank end of bridge

DSB = Double story bridge

1-5. LIST OF ABBREVIATIONS (Cont).

DSC = Double story center pallet load.

E = Used in text to describe end of bridge

E = Top panel in the near bank end of bridge, on the bank side of the junction panel

EOB = End of bridge (used in describing types of loads). Examples: EOB1, EOB2

ES/ED = Erection single/erection double pallet load

ETP = End taper panel

F = Top panel in the near bank end of bridge, on the gap side of bankseat beam

FRB = Front roller beam

JP = Junction panel

JRB = Jacking roller beam

L = Length of bridge (excluding ramps)

L = Launch of balance point of bridge to roller beam closest to the edge of gap, and all further moves of bridge during construction. Used in building and booming tables only

LLN = Light launching nose

LNCG = Launching nose cross girder

LNH = Launching nose heavy

LNR = Launching nose roller

LR = Landing roller

LRB = Launching roller beam

LRP = Landing roller pedestal

LRS = Link reinforcement set

LRS-1 = Link reinforcement set pallet load

LRS-2 = Link reinforcment set pallet load

LZ = Landing zone

PB = Push bar

1-5. LIST OF ABBREVIATIONS (Cont).

PBCG = Push bar cross girder

PT = Post tensioning assembly

RB = Roller beam

RBSB = Rear bankseat beam

RRB = Rear roller beam

SSB = Single story bridge

TBP = Temporary building pedestal

TP = Top panel

SECTION II. EQUIPMENT DESCRIPTION

	PARAGRAPH	PAGE
Equipment Purpose, Capabilities and Features	1-6	1-4
Location and Description of Major Components	1-7	1-8
Equipment Data	1-8	1-63

1-6. EQUIPMENT PURPOSE, CAPABILITIES AND FEATURES.

a. The Medium Girder Bridge (MGB) is a two girder deck bridge. The wide, upper surfaces of the girders and the deck units laid between them form a roadway 13 ft 2 in (4.0 m) wide. The girders can be constructed in two forms; a shallow single story construction as shown in A Figure 1-1., or a deeper double story construction as shown in B Figure 1-1. The double story can be reinforced by adding components of the link reinforcing set as shown in Chapter 5. This permits longer class 60 bridges to be constructed. The girders are constructed by pinning a number of panels together. The girders are separated by a bankseat beam which is pinned to each end of the girder. The roadway is formed by hanging deck units between the girders. Curbs and guide markers are placed on the outside edges of the girders to mark the edge of the bridge. A double story bridge (DSB) uses all of the parts of a single story bridge (SSB) pinned on top of triangular bottom panels, with junction panels and end taper panels at each end. These parts make the bridge strong enough to cross 95.5 ft (29.1 m) gaps accommodating heavy loads such as a large tank.

NOTE

The SSB is used for light loads and the DSB is used for heavy loads. The SSB provides class 60 bridging up to 32 ft (9.8 m). decreasing to class 16 at 74 ft (22.6m) which is the maximum length of SSB's. The DSB (without reinforcement) provides class 60 bridging up to and including 103 ft (31.4m). With reinforcement, the DSB will provide class 60 bridging up to and including 163 ft (49.7m).

b. The MGB cannot be used when bridging requirements exceed the capabilities stated in the note above.

c. Tables below give bridge lengths for specified gap widths.

Table 1-1. SSB Length vs Gap Width

Bridge Length		No. of	Minimum Gap Width		Maximum Gap Width	
Feet	Meters	Bays	Feet	Meters	Feet	Meters
26	7.9	4	12	3.7	20	6.1
32	9.8	5	18	5.6	26	7.9
38	11.6	6	24	7.4	32	9.8
44	13.4	7	30	9.2	38	11.6
50	15.2	8	36	11.0	44	13.4
56	17.1	9	42	12.9	50	15.2
62	18.9	10	48	14.7	56	17.1
68	20.7	11	54	16.5	62	18.9
74	22.6	12	60	18.4	68	20.7

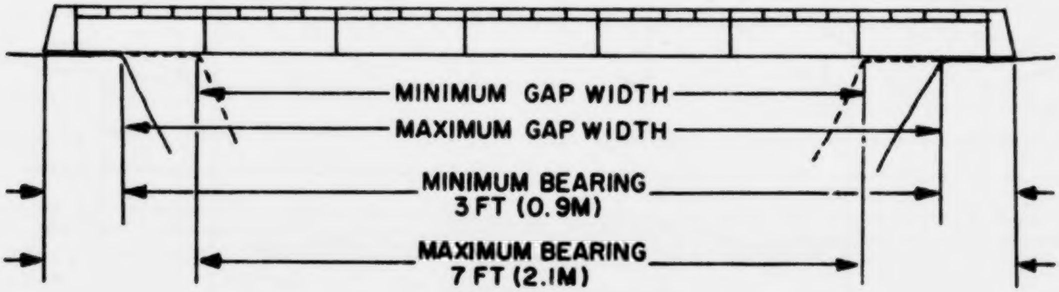
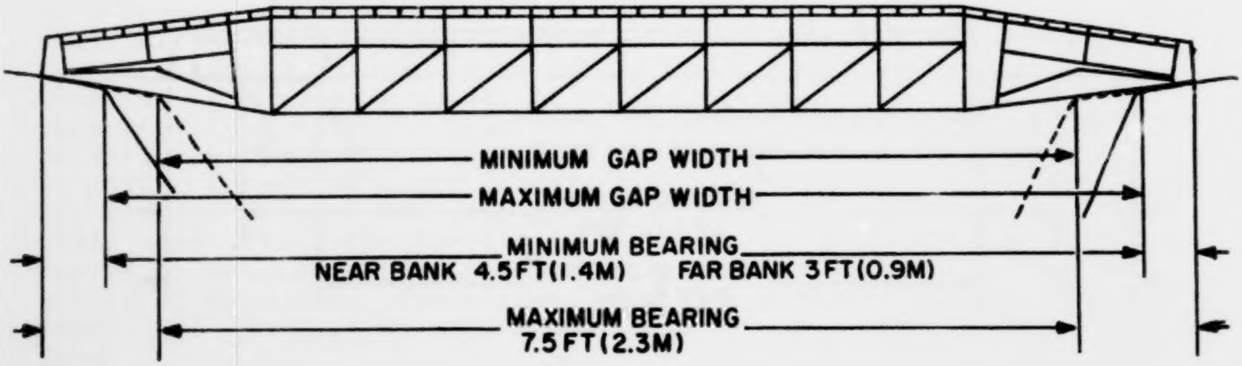


Table 1-2. DSB Length vs Gap Width

Bridge Length		2E + No of	Gap Width			
			Minimum		Maximum	
Feet	Meters	Bays	Feet	Meters	Feet	Meters
37	11.3	1	22	6.7	29.5	8.9
43	13.1	2	28	8.5	35.5	10.8
49	14.9	3	34	10.3	41.5	12.6
55	16.8	4	40	12.2	47.5	14.5
61	18.6	5	46	14.0	53.5	16.3
67	20.4	6	52	15.8	59.5	18.1
73	22.3	7	58	17.6	65.5	20.0
79	24.0	8	64	19.5	71.5	21.8
85	26.9	9	70	21.3	77.5	23.6
91	27.7	10	76	23.1	83.5	25.5
97	29.6	11	82	25.0	89.5	27.3
103	31.4	12	88	26.8	95.5	29.1
109	33.2	13	94	28.7	103*	31.4*
115	35.1	14	100	30.5	109*	33.2*
121	36.9	15	106	32.3	115*	35.1*
127	38.8	16	112	34.1	121*	36.9*
133	40.5	17	118	36.0	127*	38.8*
139	42.5	18	124	37.8	133*	40.5*
145	44.2	19	130	39.6	139*	42.5*
151	46.0	20	136	41.5	145*	44.2*
157	47.9	21	142	43.3	148.75*	45.3*
163	49.7	22	148	45.1	152.5*	46.5*

Note

* Maximum gap width with reinforcement.



d. Work parties recommended for various bridge lengths are given in Table 1-3. Increase or decrease in size of work party will in most cases increase length of time required to build the bridge.

Table 1-3. Work Parties for MGB

Bridge Lengths	Work Party
4 and 5 bay (26 ft -7.9 m 32 ft - 9.8 m) SSB	1 NCO + 8 personnel
6 thru 12 bay (38 ft - 11.6 m thru 50 ft - 15.2 m) SSB	1 NCO + 16 personnel
All DSB's	1 NCO + 24 personnel
Anchorage Party for DSB's (if required)	8 personnel
Link Reinforcement Party	8 personnel

e. Approximate building times for various bridges are given in Table 1-4. Time is figured from arrival on site to the opening of bridge.

Table 1-4. Building Times (Good Conditions)

	Bridge Length					
	Single Story			Double Story (without reinforcement)	Double Story (with reinforcement)	
	5 Bay	8 Bay	12 Bay	2E+12 Bay	2E+18 Bay	2E+22 Bay
Time by Day (hours)	1/2	3/4	1	1-1/2	2-1/4	2-1/2
Time by Night (hours)	3/4	1	1-1/4	2	2-3/4	3

For untrained troops, increase time by 20 per cent.

For inclement weather, increase time by 30 per cent.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

a. Bridge Components. Each bridge component is illustrated and its function explained.

(1) Top Panel (TP)

Top panels form the main girders of the bridge.

(a) Top panels, bankseat beams and junction panels have similar dowels, sockets, shoot bolts, butting surfaces, guide slots, guide bushings, and pin jaws.

(b) To connect one top panel to another top panel, bankseat beam or junction panel line the dowel and socket up until butting surfaces butt together. Lift the shoot bolt handle and turn to lock. Let the rear of panel down allowing guide bushings to mate in guide slot, insert panel pin and put retainer clip in the end of panel pin.

(c) Top panel is carried by four personnel.

① BUTTING SURFACE. Takes compression load when bridge is completed. Used to line panels up to close shoot bolts.

② PIN JAWS. Takes tension load when connected by panel pin to another panel or beam in bridge.

③ DOWEL AND SOCKET. Used to line up panels for connection to each other.

④ SHOOT BOLT. Holds and locks top of panel to another panel or beam during construction.

⑤ GUIDE BUSHING AND GUIDE SLOT. Used to line up pin jaws so panel pins can be put in by hand.

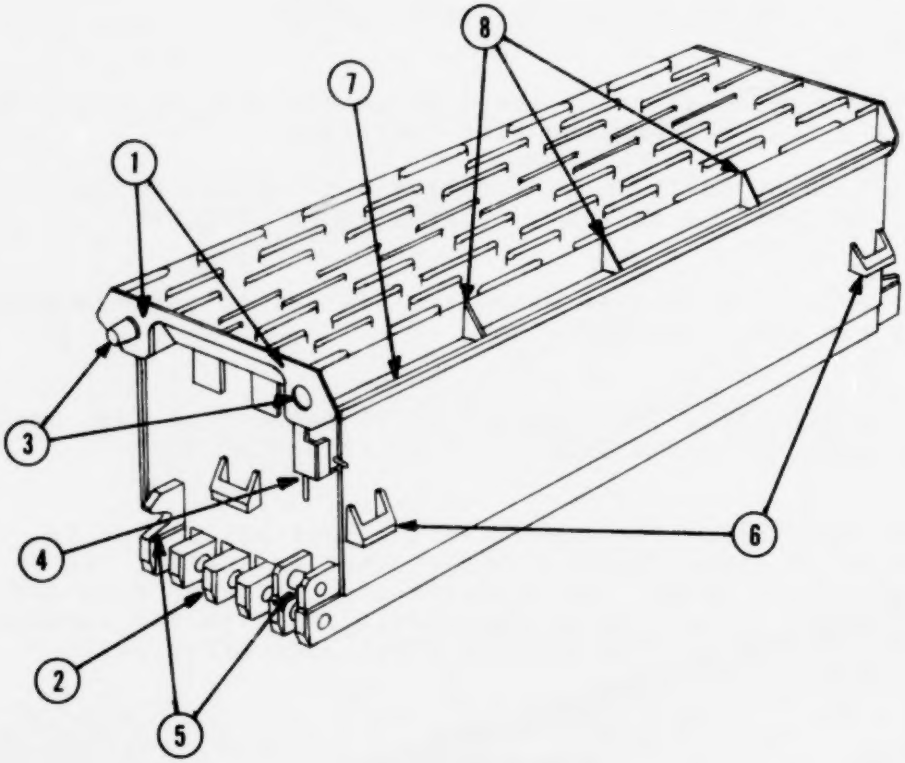
⑥ CARRYING BAR BRACKETS. For connection of carrying bars used to carry panel. One bracket at each end, and two on each side. End brackets used to load/unload panel from pallet, and to lift rear of panel to connect to another panel or beam in bridge. Brackets on side are used to carry panel.

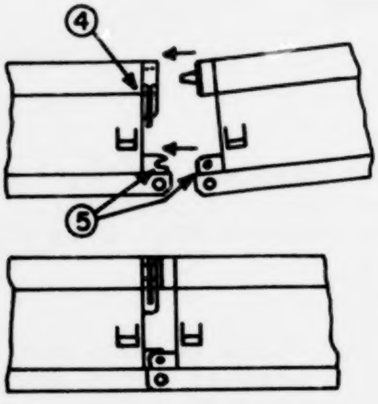
⑦ DECK RAIL. Used for placement of deck units and curbs.

⑧ DECK SPACER. Separates deck units. Prevents deck units from sliding along bridge.

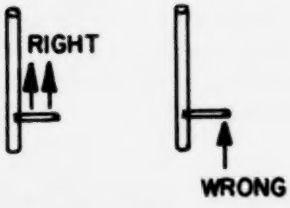
CAUTION

DO NOT hammer or beat on shoot bolts or panel pins being inserted into panels. Damage to components may result.





JOINING PANELS



CLOSING SHOOT BOLTS

(2) Bankseat Beam (BSB)

Used to provide and maintain spacing between bridge girders.

(a) Bankseat beam will connect to top panels or end taper panels.

(b) Bankseat beam can support the MGB's maximum load when bearing anywhere along its length. For minimum and maximum bearing, refer to Chapter 2.

(c) Bankseat beam is carried by six personnel.

The parts of the bankseat beam listed below are similar to those of the top panel and they perform the same functions.

Butting Surface
Pin Jaws
Shoot Bolt
Dowel and Socket
Guide Bushing and Guide Slot
Carrying Bar Bracket

The bankseat beam parts listed below are special to the bankseat beam, and perform the functions described.

① SWAY BRACE BRACKETS. For connection of one end of sway brace to beam. Only one sway brace is connected to beam.

② JACK POST BRACKETS. For connection of jack posts used to raise or lower bridge. One bracket on inside, two on outside of beam. Two brackets on outside of beam are used for connection of jack posts and also for connection of the jacking bracket links when using davit posts.

WARNING

DO NOT USE bracket on inside of beam. Use of inside bracket can result in injury to personnel or damage to bridge.

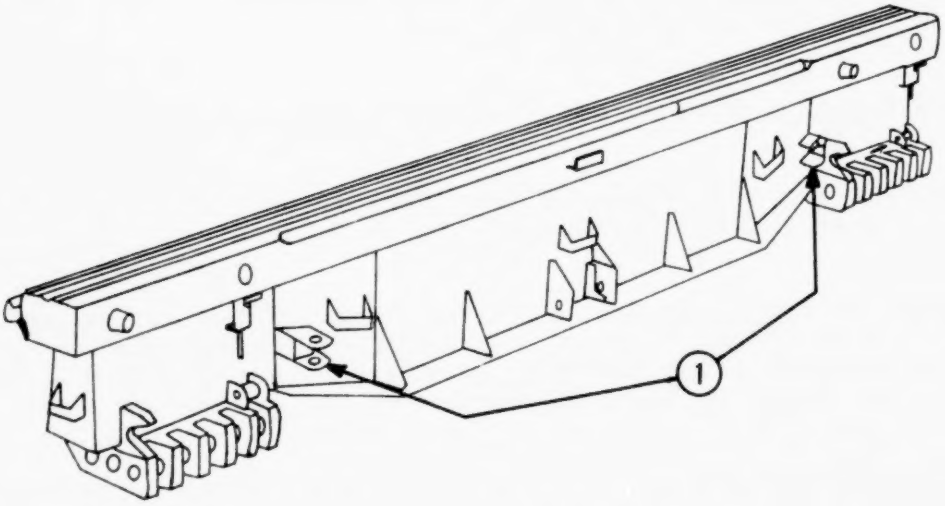
③ CENTER BRACKET. For connection of rear end of light launching nose, launching nose roller, and push bar. Components are connected to this bracket with a launching nose pin.

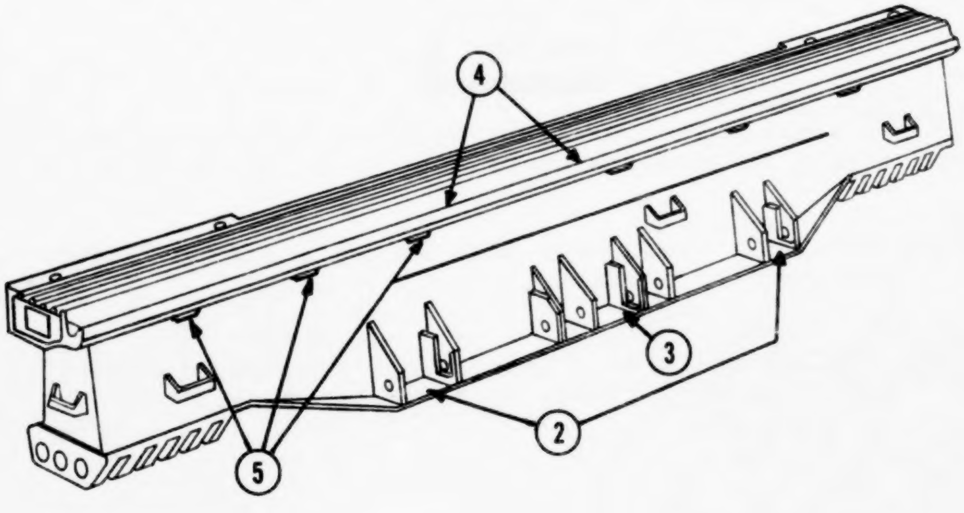
④ RAMP SHELF. For connection of ramp units to bankseat beam and for connection of jacking bracket links when using davit posts.

⑤ ANTI-LIFT LUGS. Prevents ramps from lifting off bankseat beam.

CAUTION

DO NOT hammer on shoot bolts, panel or nose pins being inserted in bankseat beam. Damage to components may result.





(3) Ramp Unit (Short and Long)

The ramp unit is used at both ends of the bridge allowing vehicles easy access and exit.

(a) Seven ramps are used at each end of bridge.

(b) Short ramps are used on single story bridges only. Long ramps can be used on single story bridges. Long ramps must always be used on double story bridges.

(c) Short ramps are carried by four personnel. Long ramps can be carried by four or six personnel.

① RAMP HOOK. Fits on ramp shelf of bankseat beam.

② ANTI-LIFT LUGS. Prevents ramp from lifting off bankseat beam during crossing of traffic.

③ CARRYING HANDLE HOLES. Pairs of holes on top and to either side of the ramp unit which allow the ramp to be carried using carrying handles. There are four pairs of holes in short ramp, six in the long ramp.

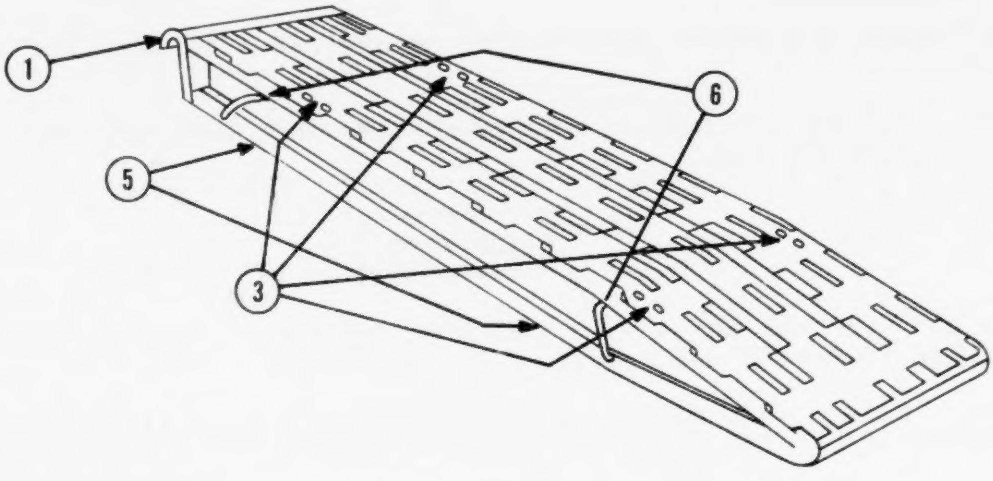
④ CARRYING BAR BRACKETS. Long ramps have two carrying bar brackets on each side.

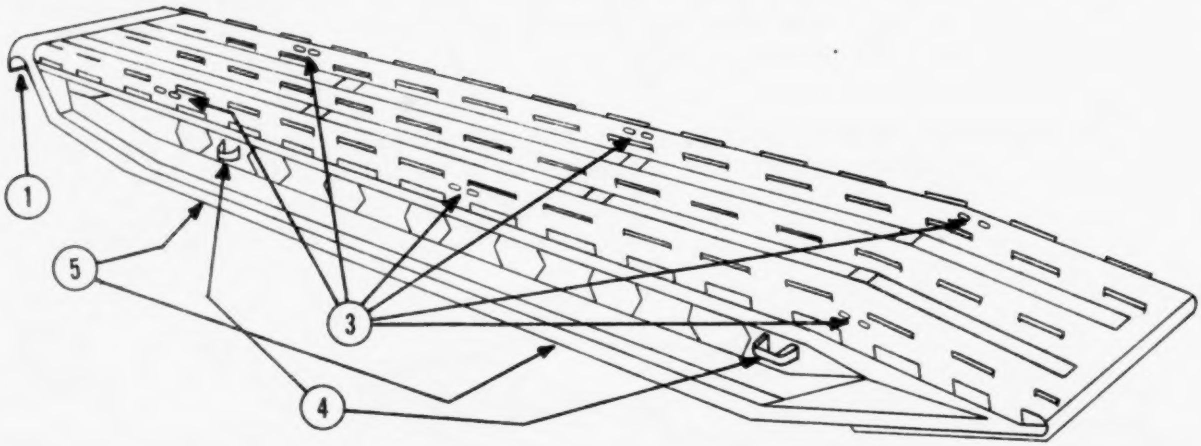
WARNING

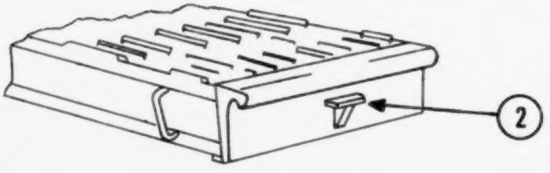
DO NOT USE carrying bar brackets as crane lifting points. Serious injury to personnel or damage to bridge may result.

⑤ STACKING LUGS. Ramps have lugs on top and bottom that are used for stacking.

⑥ CRANE LIFTING BRACKETS. Short ramps have two brackets on each side for lifting of ramps by crane.



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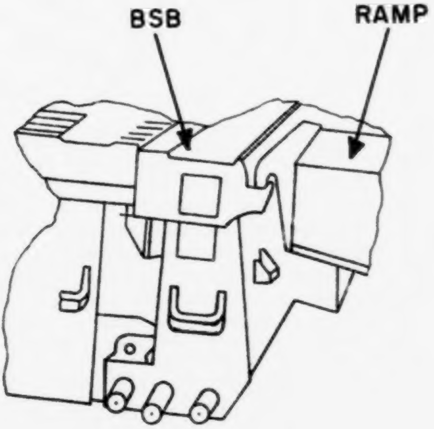

BSB
RAMP

(4) Deck Units

Deck units are placed between the main girders to complete the bridge roadway.

(a) During the decking of the bridge, deck units can be used as a temporary ramp.

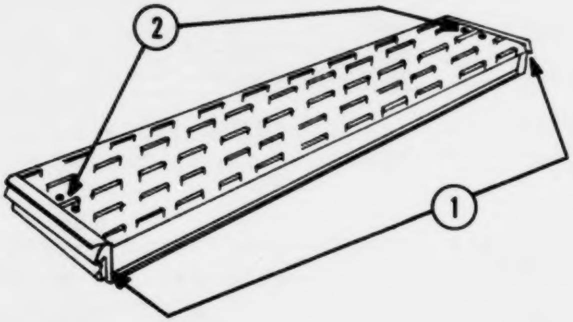
CAUTION

DO NOT USE deck units as a temporary ramp for crossing vehicles. Damage to bridge may result.

(b) A deck unit can be used as a lever to ease pinning or unpinning of the end taper and junction panels.

① RAIL HOOKS. Rail hooks on either end of the deck unit fasten over the top panels deck rail, securing the deck unit in place.

② CARRYING HANDLE HOLES. Two pairs of holes, located at either end of the deck allow the deck unit to be carried with the use of carrying handles.



(5) Curb

(a) The curb is used to warn drivers of their nearness to the edge of bridge.

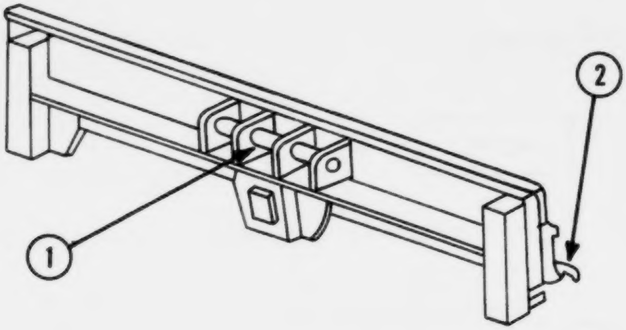
(b) One curb is used on each top panel.

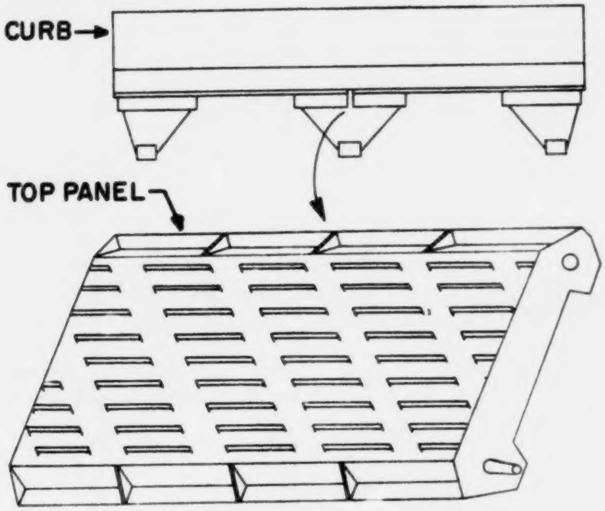
(c) A curb unit is carried by one person.

① CARRYING HANDLE. On back side of curb.

② RAIL HOOK. Connects curb to deck rail on top panel.

③ SUPPORT BLOCKS. Keep curbs in upright position on top panel.





(6) Bridge Guide Markers

(a) Marker is placed in hole at end of curb.

(b) Panel should be positioned to the outside of curb.

(c) Markers are placed as shown below.

① POST. Two tubes which telescope to raise or lower marker.

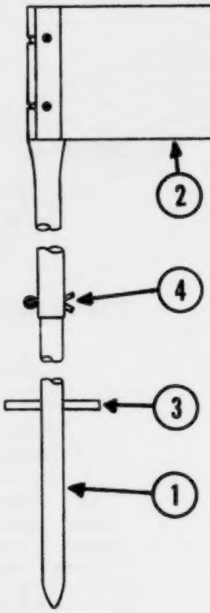
② PANEL. Reflective white plastic panel attached to top of post.

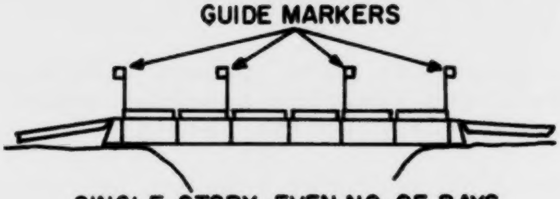
③ SUPPORT PINS. Two pins near bottom of post which help to keep post in position.

④ BOLT AND WING NUT. Used to secure post in fully extended position.

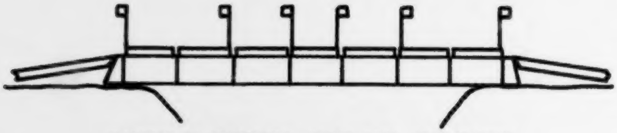
NOTE

Remove panels from post before storing markers in baskets.

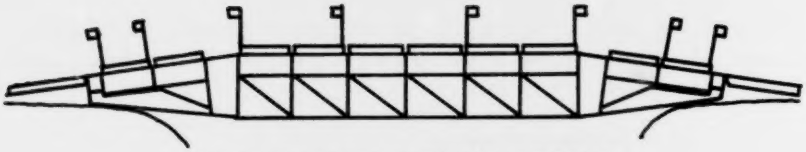




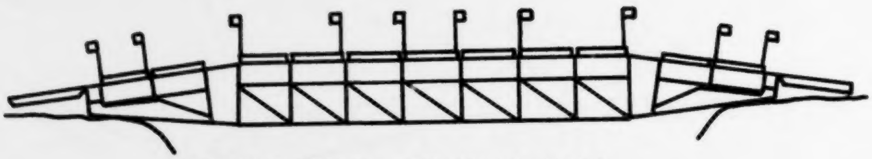
SINGLE STORY-EVEN NO. OF BAYS



SINGLE STORY-ODD NO. OF BAYS



DOUBLE STORY-EVEN NO. OF BAYS



DOUBLE STORY-ODD NO. OF BAYS

(7) Bottom Panel (BP)

The bottom panel forms a second, deeper girder that is used in double story MGB.

(a) The bottom panel's lower pin jaws connect bottom panels together with other bottom panels and junction panels. Upper jaws of bottom panel connect to top panels and junction panels.

(b) The bottom panel is a directional panel. The large end faces the far bank during construction.

(c) The bottom panel is carried by four personnel.

The parts of the bottom panel listed below are similar to those of the top panel and they perform the same functions.

Carrying Bar Bracket
Guide Bushing and Guide Slot
Pin Jaws

The parts of the bottom panel listed below are special to the bottom panel and perform the functions described.

① UPPER JAWS. The upper jaws are cradled under the panel pin that fits through the top panel pin jaws.

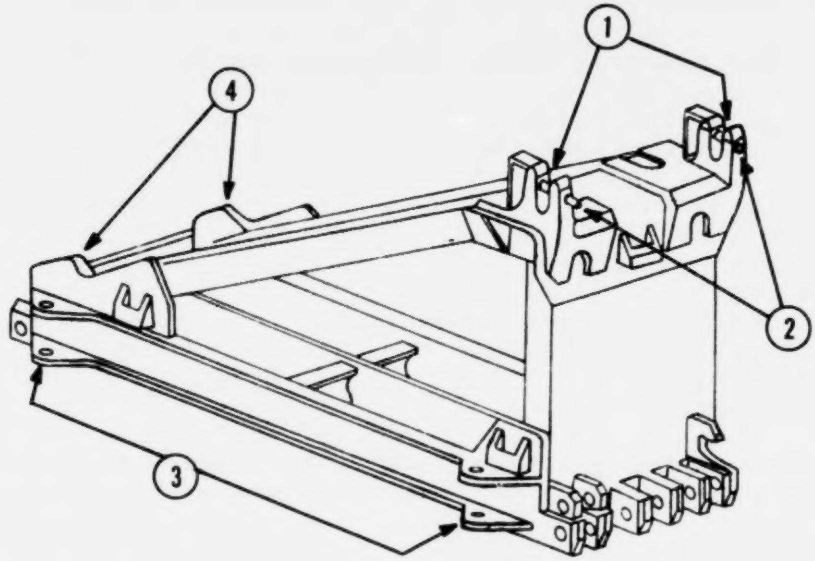
② SHOOT BOLT. The shoot bolt locks the bottom panel to the top panel by closing over the panel pin The shoot bolt engages and releases by hand.

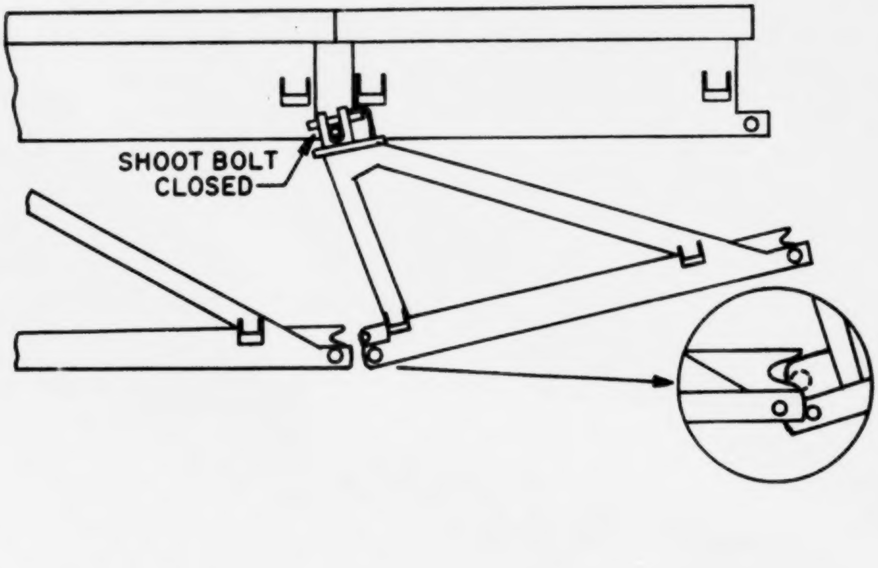
CAUTION

DO NOT hammer on shoot bolt. Damage to component may result.

③ SWAY BRACE BRACKETS. For connection of sway braces used in double story bridges. There are two brackets on each side.

④ STACKING PADS. Permits secure and proper stacking of panels for transporting.




SHOOT BOLT
CLOSED

(8) Junction Panel(JP)

Used in the double story bridge to connect the sloping end of the bridge to the level roadway of the bridge.

(a) Curbs are not used on the junction panel.

(b) The junction panel is carried by four personnel.

The parts of the junction panel listed below are similar to those of the top panel and they perform the same functions.

Butting Surface
Pin Jaws
Dowel and Socket
Shoot Bolt
Guide Bushing and Guide Slot
Carrying Bar Bracket
Deck Rail
Deck Spacer

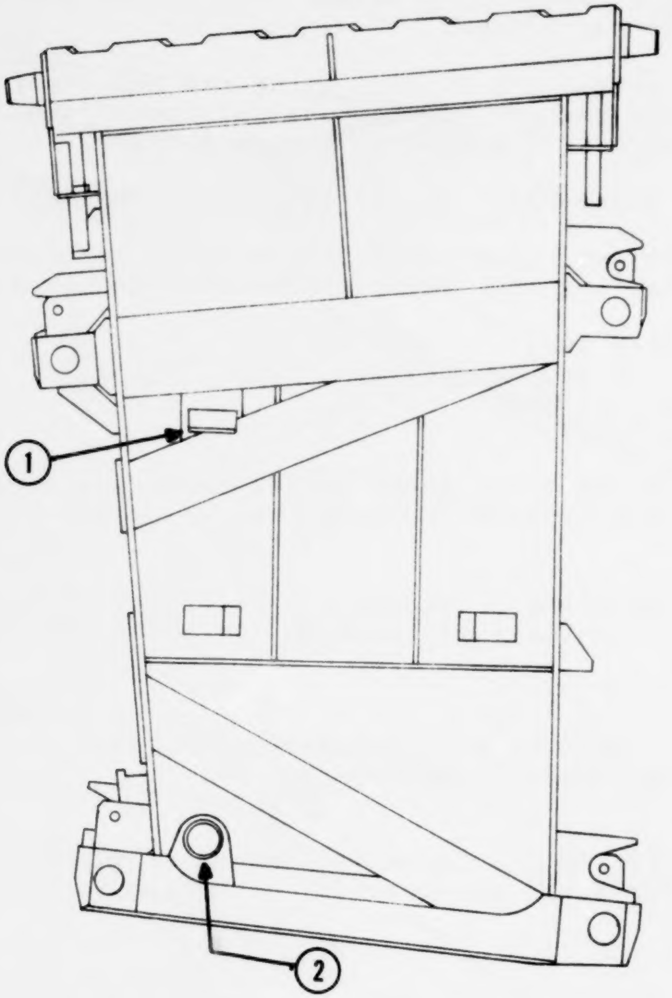
The parts of the junction panel listed below are special to the junction panel and perform the functions described.

① POST LUG. Used to position launching nose cross girder post.

② POST PIN HOLE. For placement of headless pin to connect launching nose cross girder post.

NOTE

A headless pin will always be used in the post pin hole.


1
2

(9) End Taper Panel (ETP)

The end taper panel is a support brace between the junction panel and the bankseat beam. It provides most of the bearing surface needed for support of the bridge.

(a) No more than 7-1/2 ft (2.3 m) of the end taper panel can rest on the ground and provide bearing for the bridge. If this limit is exceeded there will be damage to the bridge.

(b) The end taper panel is carried by six personnel.

The parts of the end taper panel listed below are similar to those of the top panel and they perform the same functions.

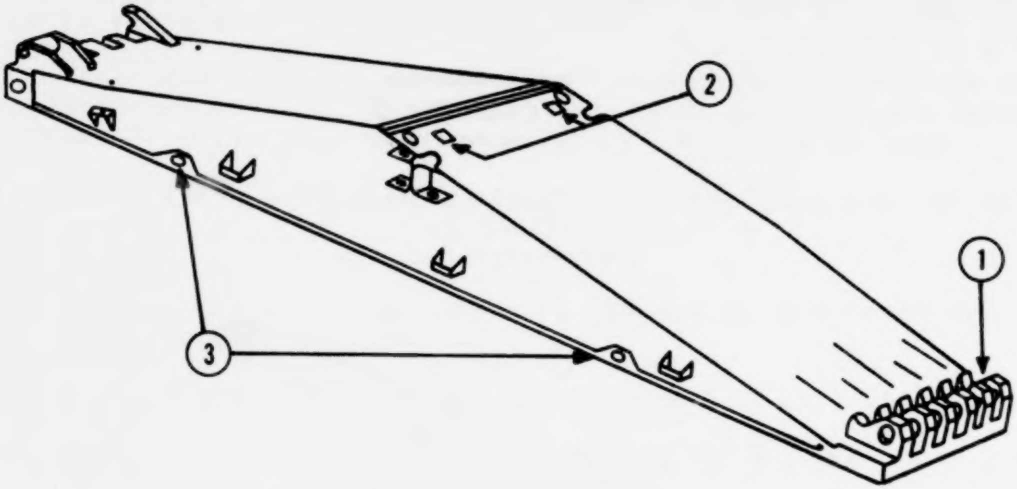
Pin Jaws (Gap End)
Guide Bushing and Guide Slot
Carrying Bar Brackets
Sway Brace Brackets

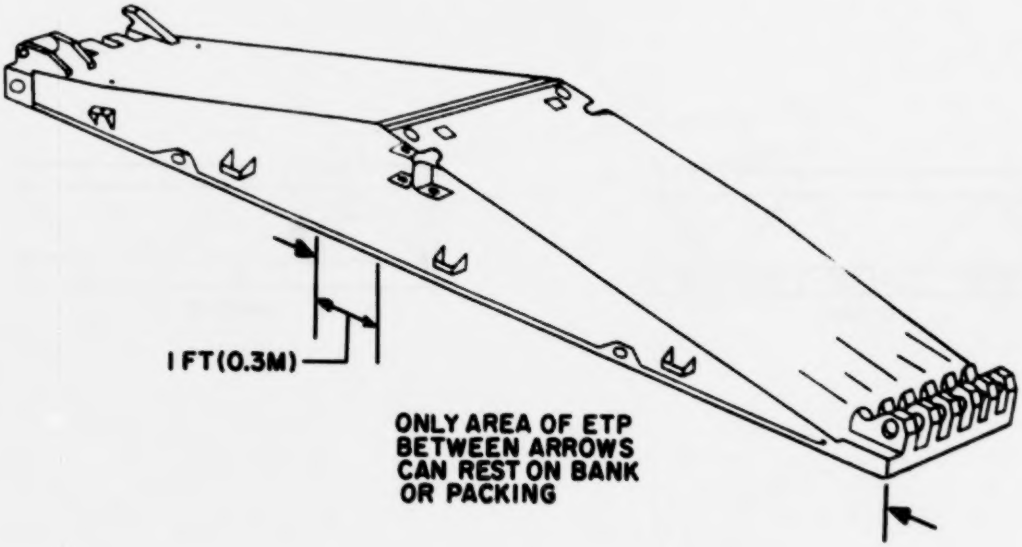
The parts of the end taper panel listed below are special to the end taper panel and perform the functions described.

① PIN JAWS (Bank end). Connects to pin jaws of bankseat beam. Provides pin seating for guide pin in bankseat beam.

② PIN STOPS. Used to position panel pin under top panel before junction panel is put on.

③ ANCHORAGE PIN HOLES. Used for placement of anchorage pin, and for panel pin used for attaching footwalk bearer.



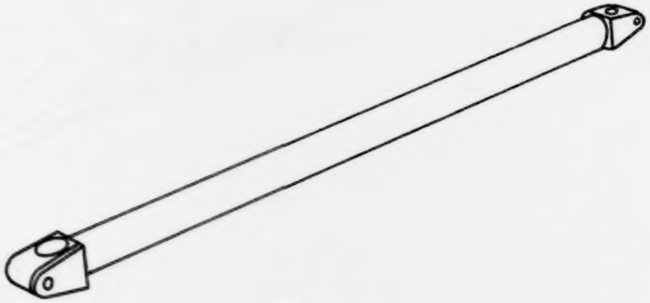

1 FT(0.3M)
ONLY AREA OF ETP
BETWEEN ARROWS
CAN REST ON BANK
OR PACKING

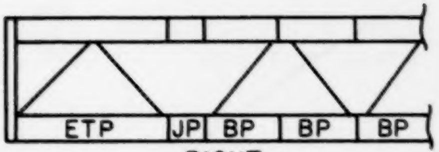
(10) Sway Brace

Used as cross member between bottom panels in girders of double story bridges. Pinned to sway brace brackets with bracing pins and retainer clips.

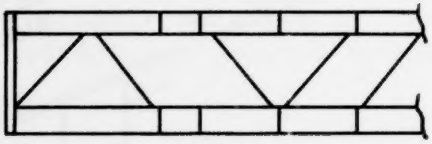
CAUTION

DO NOT USE sway braces as levers. Damage to brace may result.





RIGHT



WRONG

(11) Panel Pin

Panel pins are used to connect top panels, bottom panels, junction panels, end taper panels, and bankseat beams. The panel pin has a shoulder at one end and is slotted at the other end. There are holes in the slot for the retainer clip.

(a) All pins are fitted into the bridge by hand from the outside of the girder. When pin jaws, guide bushings and guide slots are properly mated, the pin can be inserted easily by hand.

CAUTION

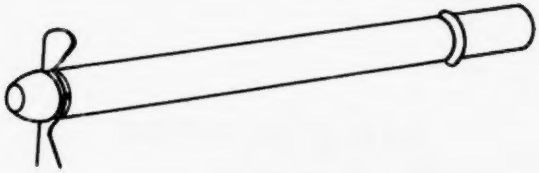
Never use a hammer on any pin. Damage to pin or bridge component may result.

(b) Retainer clips are put through all panel pins except:

The pin connecting the bankseat beam to the end taper panel.

The pin connecting bottom panels to top panels.

(c) When constructing a long DSB (19 thru 22 bay), it is necessary to ensure that.retainer clips are placed horizontally in bottom panel panel pins (bottom chord).



(12) Headless Panel Pin

The headless panel pin is similar to the panel pin except that it has no shoulder and it is slotted at both ends. Being slightly longer and headless it has a longer reach through component pin jaws.

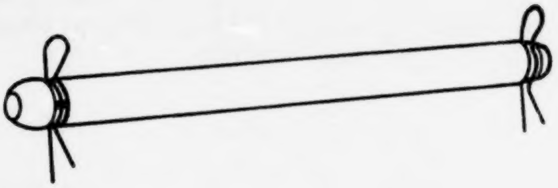
(a) In the 9 thru 12 bay single story bridge, the headless panel pin is used to connect the top panels of the second and third bay so the launching nose cross girder posts can be secured at this point.

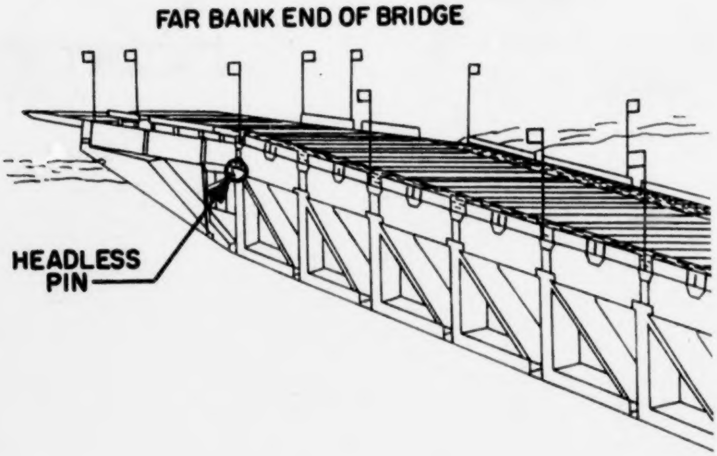
(b) In the double story bridge, the headless panel pin is used in:

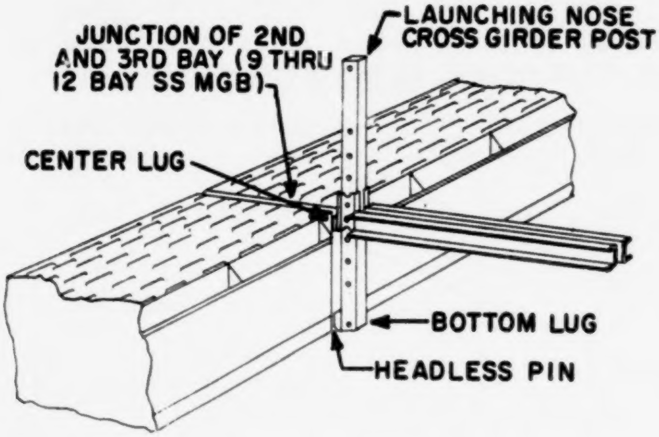
1) The post hole on the junction panel for connection of the launching nose cross girder post.

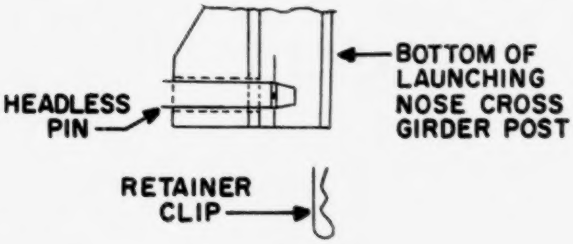
2) The pin jaws of the first bay top panel connecting it to the junction panel.

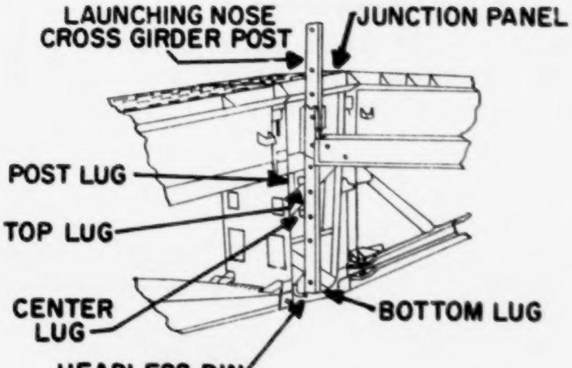
3) The top hole of the launching nose link, to secure the second story nose to the first story.





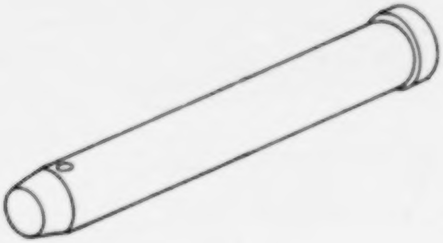

JUNCTION OF 2ND AND 3RD BAY (9 THRU 12 BAY SS MGB)
LAUNCHING NOSE CROSS GIRDER POST
CENTER LUG
BOTTOM LUG
HEADLESS PIN


HEADLESS PIN
BOTTOM OF LAUNCHING NOSE CROSS GIRDER POST
RETAINER CLIP


LAUNCHING NOSE CROSS GIRDER POST
JUNCTION PANEL
POST LUG
TOP LUG
CENTER LUG
BOTTOM LUG
HEADLESS PIN

(13) Bracing Pin

Used to connect sway braces to sway brace brackets. Used to connect push bar to push bar adapter and cross girder.

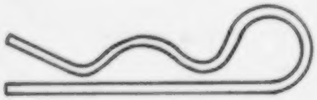


NOTE

The only bracing pin that can be hammered on, is the pin used in the fork end anchors of the LRS anchor assemblies. These pins may be hammered into place using the plastic faced hammer that is provided in the set.

(14) Retainer Clip

Used in all pins except panel pins connecting bankseat beam to end taper panels, and panel pins connecting bottom panels to top panels.



b. Erection and Launch Components. The erection and launch components are illustrated and the function of each is explained.

(1) Baseplate, Single Story

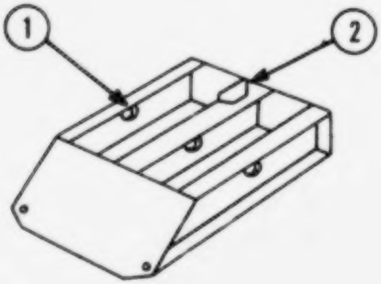
Used under fixed supports as base for roller beam. Used with jack supports as base for hydraulic jack.

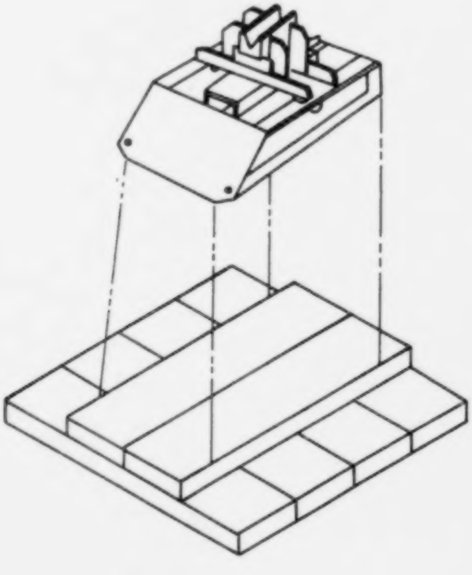
(a) Sloping edge faces gap.

(b) Can be placed on timber (3 in x 8 in x 36 in) or deck unit packing.

① NOSE PIN HOLES. For placement of nose pin used to connect jack support to baseplate.

② LUG. Holds fixed support in position.





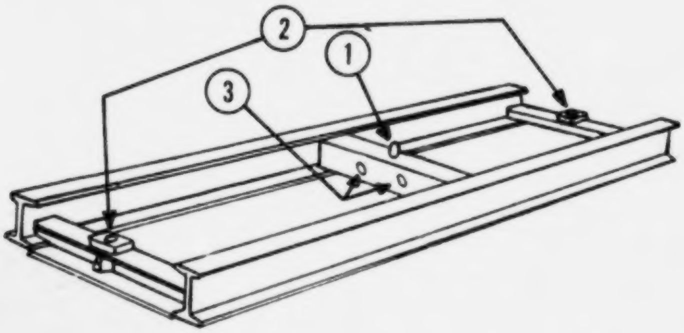
(2) Baseplate, Double Story

Used under adjustable support as base for roller beam. Used with jack supports as base for hydraulic jack to raise or lower bridge. Used under davit post assembly as base for raising or lowering bridge. Can be placed on timber (3 in x 8 in x 36 in) packing.

① BALL. The ball is a pivoting point for the adjustable support. It takes the bridge load from the roller beam and distributes it through the baseplate.

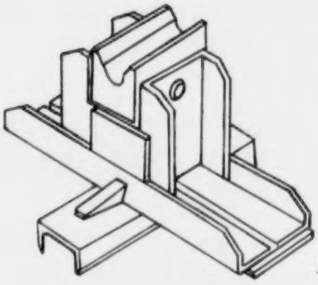
② LEVELLING SCREW HOLES. Used for positioning of levelling screws in upright position.

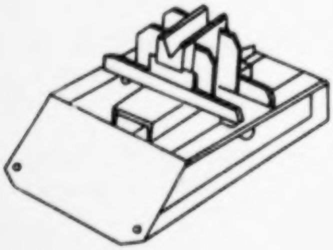
③ NOSE PIN HOLES. For placement of nose pin used to connect jack support.



(3) Fixed Support

The fixed support when connected to the baseplate, supports the roller beam in the assembly of single story bridge. The pivoting head permits the roller beam to rock back and forth as needed under the bridge during booming, launching, and de-launching.





(4) Adjustable Support

The adjustable support is used in the construction of double story bridge. It supports the roller beam and bridging capsill. It also permits adjustment in the roller beam's height and slope.

(a) In the posts of the adjustable support there are six support pin holes. These holes are used to support the roller beam/capsill and jack seat during raising and lowering of the beam to various heights. The holes are on 5-1/2 in (0.014 mm) centers.

(b) Levelling screws are adjusted to allow the adjustable support to rock 1/4 inch (6 mm) in either direction.

① BALL JOINT. Used as pivoting point for adjustable support. Takes load of roller beam and distributes through the baseplate.

② LEVELLING SCREWS. Used to level adjustable support. Screws should be adjusted to bring the posts as close to vertical as is possible.

③ POSTS. Guides in which the roller beam/capsill can be moved up or down.

④ SUPPORT PIN HOLES. Used to position roller beam and jackseat at different heights.

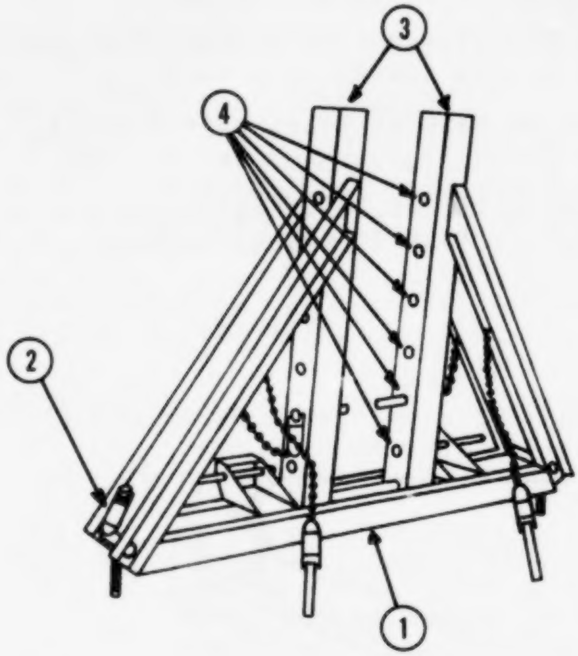
CAUTION

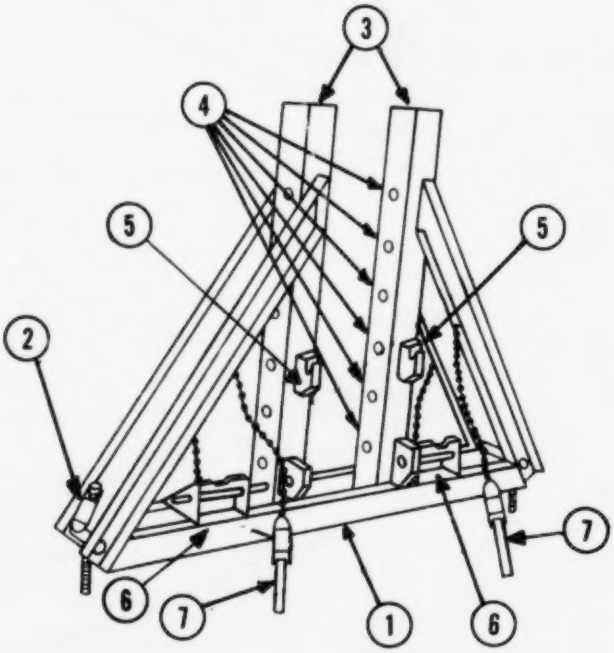
Jackseat must not be placed on pins in holes 4,5, or 6.

⑤ HOOKS. For connecting upper part of cross girder to support.

⑥ SHOOT BOLTS. For connecting bottom part of cross girder to support.

⑦ SUPPORT PINS. Two pins on each side of support permit changing height of roller beam/capsill and jack seat.



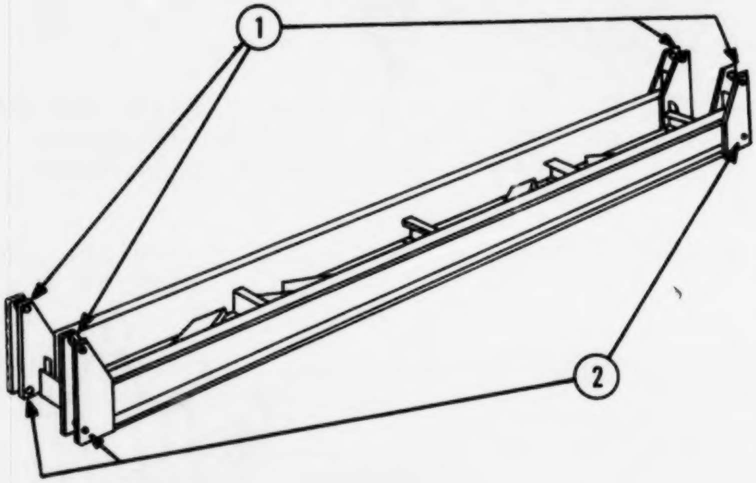


(5) Frame Cross Girder

Used to space and maintain distance between adjustable supports.

① BUSHING. Fits in hooks on post of adjustable support.

② SHOOT BOLT HOLES. Shoot bolts of adjustable support go through these holes to lock girder to support.



(6) Roller Beam (RB)

The building of any MGB, regardless of length, requires a roller beam. The roller beam allows the bridge to be boomed (moved), when needed during construction.

(a) Roller beam is placed on fixed supports for single story, or in adjustable supports for double story. Ideal conditions (perfectly level ground) will permit placement of roller beam on ground or timber packing.

(b) Roller catches must not be engaged while bridge is moving over roller beam.

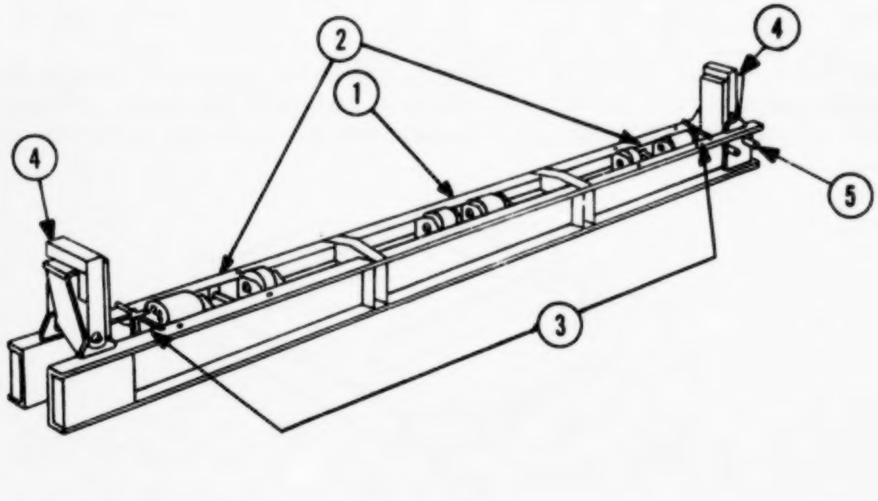
① CENTER ROLLERS. Permits light launching nose and bankseat beam to ride over roller beam during single story construction.

② OUTER ROLLERS. During MGB construction bridge girders roll over two pairs of outer rollers. The outer roller of each pair is slotted so that the roller can engage with the roller catch and be locked.

③ ROLLER CATCH. Used to lock outer rollers.

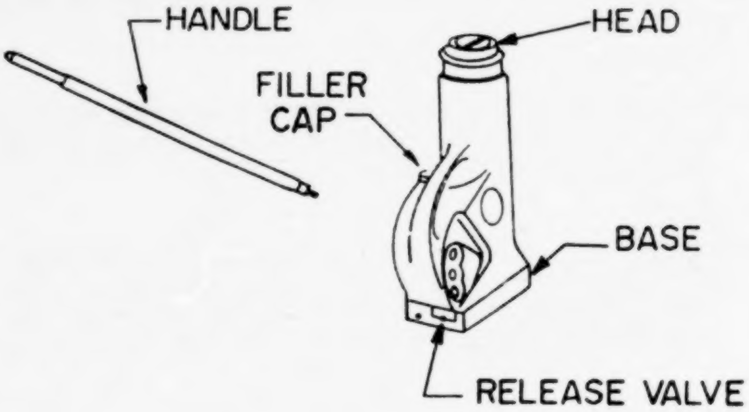
④ JACK HOOD. Used in double story construction for placement of hydraulic jack.

⑤ PINS, FIXED AND RETRACTABLE. Used to hold roller beam in adjustable support.



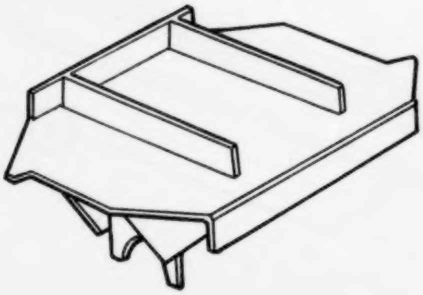
(7) Hydraulic Jack (15 ton)

Hydraulic jacks are used in the construction of all MGB's through and including 2E + 22 bay. They are used to raise and lower the bridge as needed during all phases of construction. The jacks are used in the adjustable supports to level roller beams. This jack is used in the landing roller pedestal for all MGB's except link reinforced bridges.



(8) Jack Seat

Used to support jack in adjustable support. Jackseat can be placed on support pins to change height of jack. Open end of U-shaped ridge on top of jack seat faces toward outside of adjustable support.



(9) Jack Post (with Lifting Bracket)

Connected to bankseat beam to provide an adjustable bracket for jacking the bridge up or down.

① WEDGE. Used between jack post and bankseat beam as a spacer to provide more clearance for jack in single story construction.

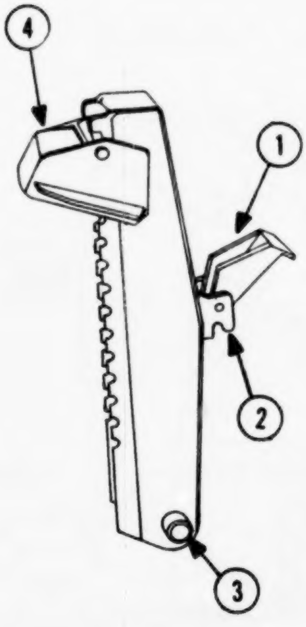
② HOOK. Connects post to ramp shelf on bankseat beam in double story construction.

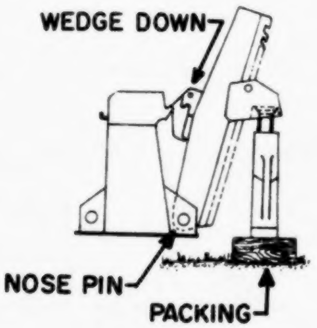
③ NOSE PIN HOLE. For insertion of a nose pin to secure bottom of post to jack post bracket on bankseat beam.

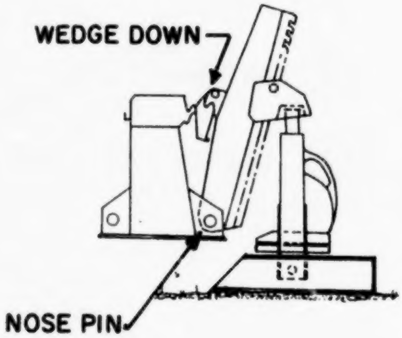
④ LIFTING BRACKET. Movable hood for positioning of hydraulic jack.

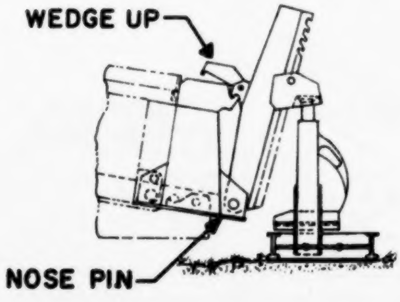
WARNING

DO NOT place bracket in top notch and try to raise bridge with jack. Serious injury to personnel and damage to bridge may occur.



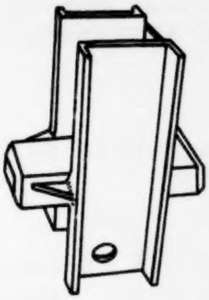


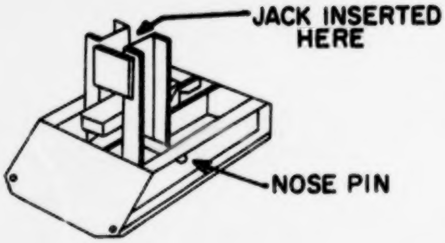




(10) Jack Support

Used to support jack on single or double story base plates during jacking of the bridge.





(11) Light Launching Nose, Front and Rear Sections

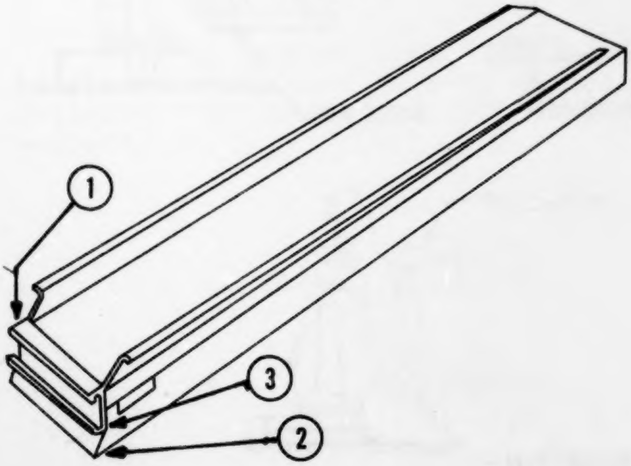
Used as complete launching nose for 4 thru 8 bay single story, and as the first two nose sections of launching noses on 9 thru 12 bay single story and 1 thru 22 bay double story bridges.

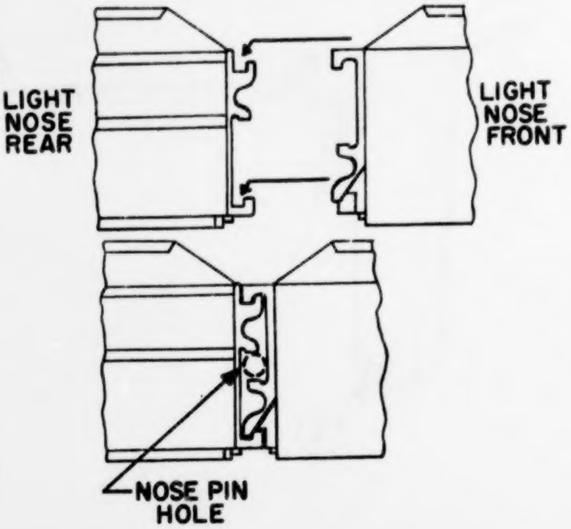
(a) FRONT SECTION

① TOP CLIP. Hooks over top rail of rear section.

② BOTTOM CLIP. Hooks over bottom rail of rear section.

③ CENTER LUG. With center lug of rear section, forms nose pin slot.





(b) REAR SECTION.

① TOP RAIL. Mates with top clip of front section.

② BOTTOM RAIL. Mates with bottom clip of front section.

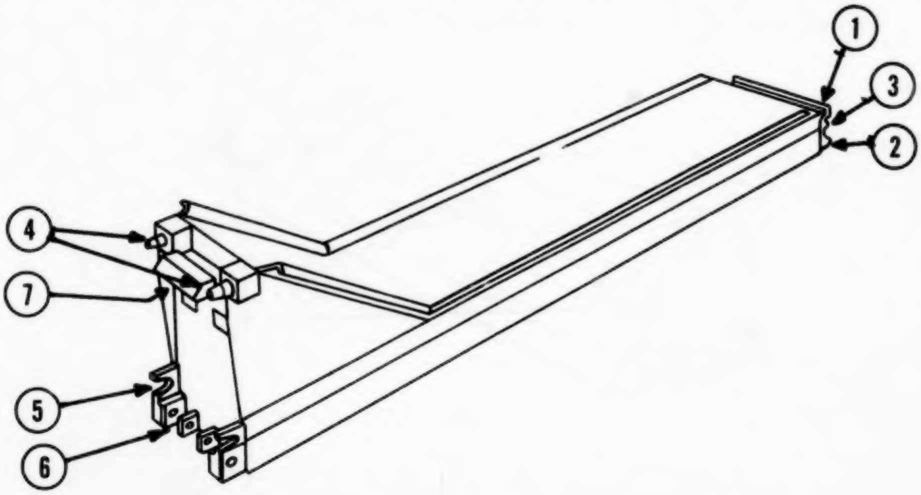
③ CENTER LUG. With center lug of front section, forms nose pin slot.

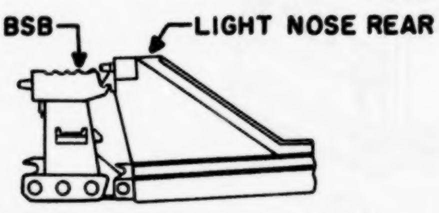
④ DOWELS. Used to line up nose section with heavy launching nose section.

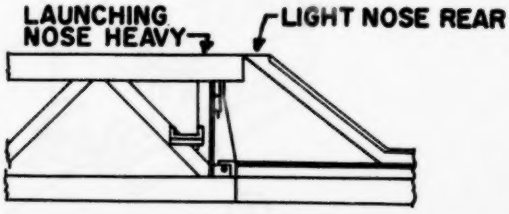
⑤ GUIDE SLOTS. Used to line up pin jaws so nose pin can be inserted by hand.

⑥ PIN JAWS. Takes tension load when connected by nose pin to bankseat beam or another nose section.

⑦ CENTER HOOK. Connects to ramp shelf on bankseat beam in 4 thru 8 bay single story construction.







(12) Launching Nose Heavy (LNH)

Forms the main part of the heavy launching noses needed for 9 thru 12 bay single story and all double story bridges.

① DOWELS AND SOCKETS. Used to line up nose sections for connection to each other.

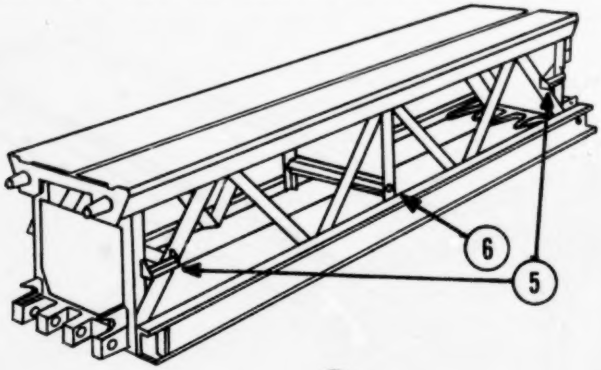
② GUIDE BUSHINGS AND GUIDE SLOTS. Used to line up pin jaws so nose pin can be inserted by hand.

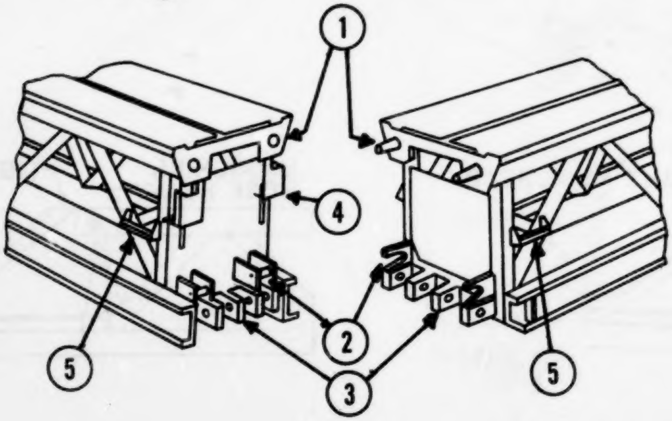
③ PIN JAWS. Takes tension load when connected by nose pin to another nose section.

④ SHOOT BOLTS. Locks and holds top of nose section to another section during construction.

⑤ CARRYING BAR BRACKETS. For connnection of carrying bars used to carry panel. Two brackets on each side.

⑥ ANCHORAGE TUBE. For insertion of panel pins used to secure launching nose to nose roller.





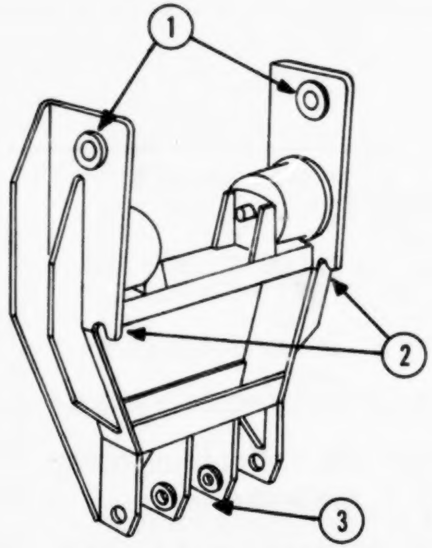
(13) Launching Nose Roller (LNR).

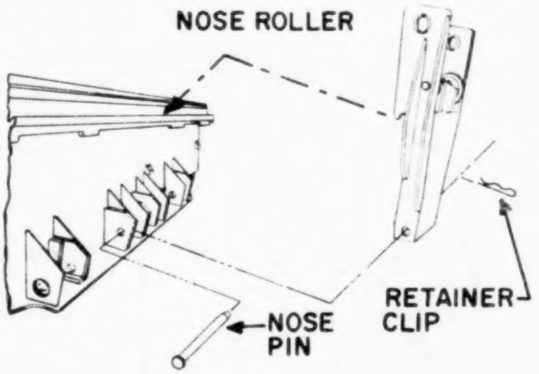
Permits movement of launching nose during construction. Provides support and anchorage point for launching nose during and at completion of construction.

① ANCHORAGE HOLES. For insertion of panel pin to secure nose to roller.

② RAMP SHELF HOOKS. For connection of roller to ramp shelf of bankseat beam.

③ PIN JAWS. Connects bottom of roller to center bracket of bankseat beam.





(14) Launching Nose Cross Girder Post

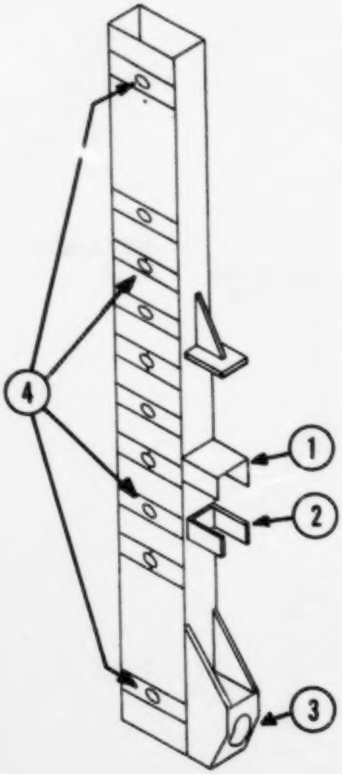
Used to connect cross girder to bridge and to permit positioning of cross girder in any one of eight positions.

① TOP LUG. Connects to lug on junction panel.

② CENTER LUG. Connects to butting surfaces of two top panels in single story construction.

③ BOTTOM LUG. For connection of post to bottom of top panels or junction panel. Headless panel pin is always used to connect bottom of post to panel.

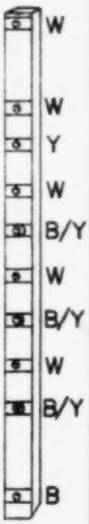
④ PIN HOLES. For insertion of captive pins to secure cross girder to posts.

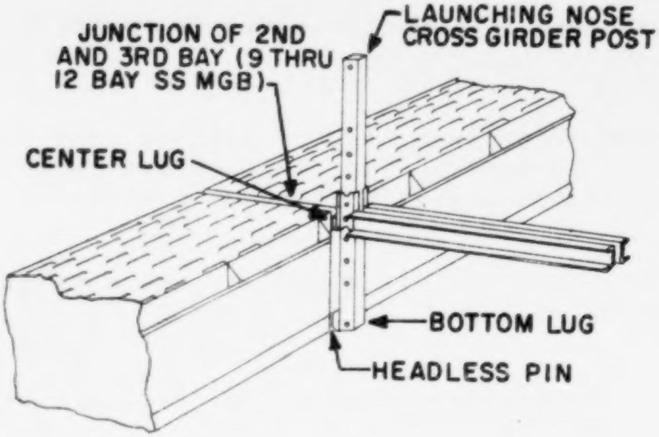


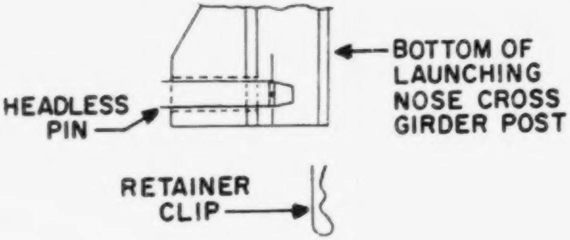
WHITE STRIPE (FOR MULTI-SPAN BRIDGES)
HOLES NUMBERED 3,5,7,9 AND 10
(FROM BOTTOM UP)
HIGH POSITION 8 – BETWEEN HOLES 9 AND 10
HIGH MID POSITION 7 – BETWEEN HOLES 7 AND 9
LOW MID POSTION 5 – BETWEEN HOLES 5 AND 7
LOW POSITION 3 – BETWEEN HOLES 3 AND 5

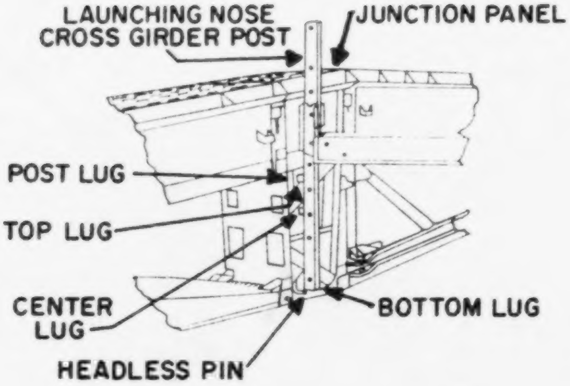
YELLOW STRIPE (FOR SINGLE SPAN DS BRIDGES)
HOLES NUMBERED 2,4,6 AND 8
(FROM BOTTOM UP)
HIGH POSITION 6 – BETWEEN HOLES 6 AND 8
MID POSITION 4 – BETWEEN HOLES 4 AND 6
LOW POSITION 2 – BETWEEN HOLES 2 AND 4

BLACK STRIPE (FOR SINGLE SPAN SS BRIDGES)
HOLES NUMBERED 1,2,4 AND 6
(FROM BOTTOM UP)
HIGH POSITION 4 – BETWEEN HOLES 4 AND 6
MID POSITION 2 – BETWEEN HOLES 2 AND 4
LOW POSITION 1 – BETWEEN HOLES 1 AND 2




LAUNCHING NOSE CROSS GIRDER POST
JUNCTION OF 2ND AND 3RD BAY (9 THRU 12 BAY SS MGB)
CENTER LUG
BOTTOM LUG
HEADLESS PIN


BOTTOM OF LAUNCHING NOSE CROSS GIRDER POST
HEADLESS PIN
RETAINER CLIP


LAUNCHING NOSE CROSS GIRDER POST
JUNCTION PANEL
POST LUG
TOP LUG
CENTER LUG
BOTTOM LUG
HEADLESS PIN

(15) Launching Nose Cross Girder (LNCG)

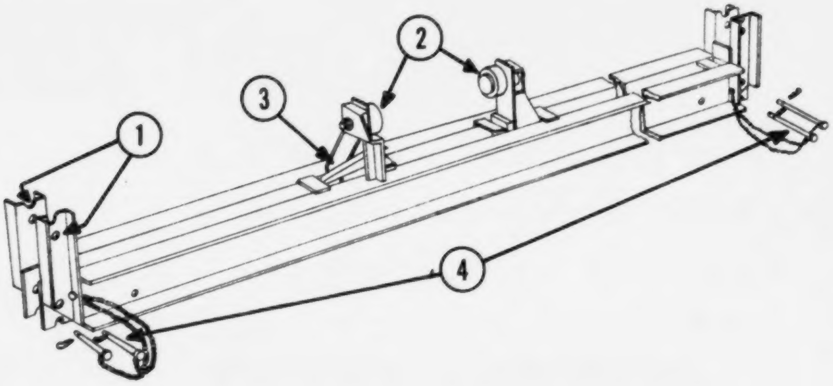
Used to hold near bank end of launching nose in position set for construction and launch.

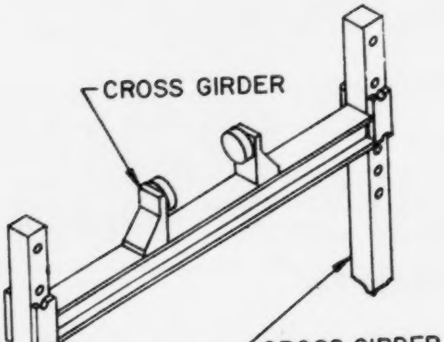
① PIN HOLES AND JAWS. For insertion of captive pins to secure girder to posts. Top pin hole used with bottom jaw, or top jaw with bottom pin hole.

② ROLLERS. Bottom rail of heavy launching nose sections will run under rollers.

③ GRAVITY CATCH. Used to prevent over-launching of nose during construction.

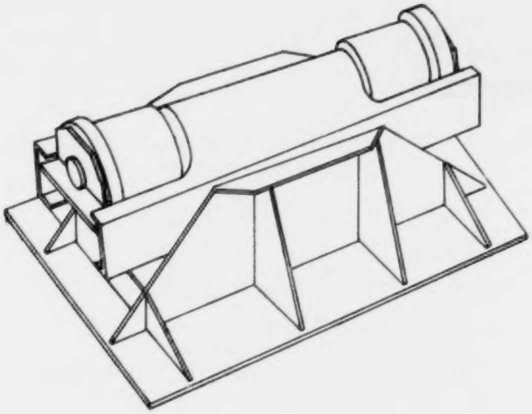
④ CAPTIVE PINS. Used to secure girder to posts. Retainer clips must be used in captive pins.

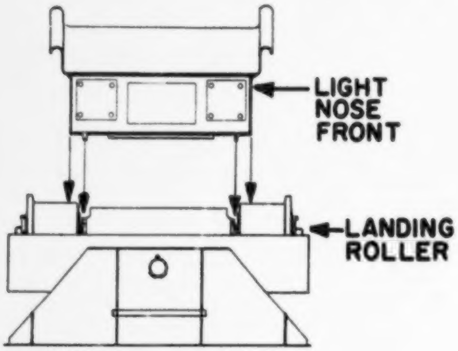


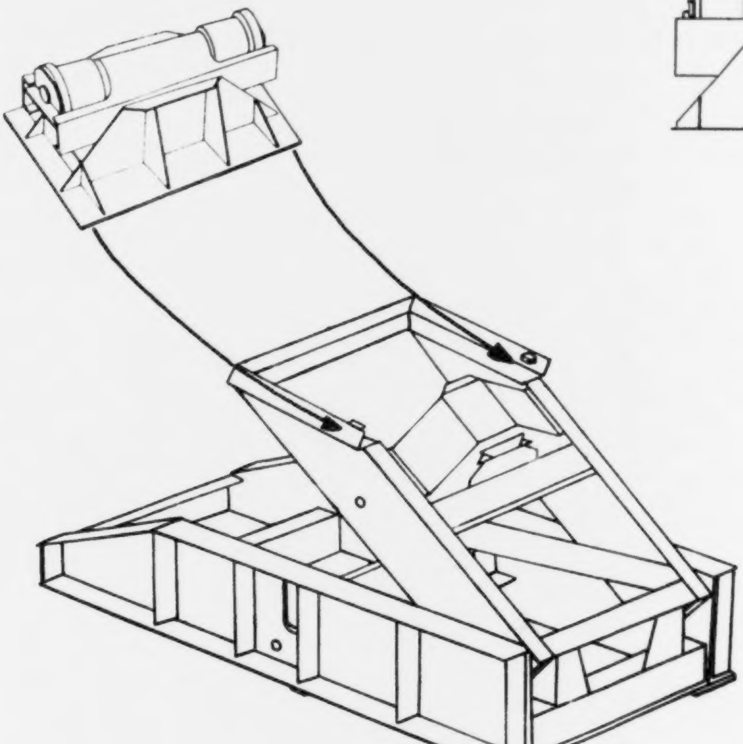


(16) Landing Roller (LR)

Used on far bank to receive launching nose. Can be used on ground for 4 thru 8 bay single story, or on landing roller pedestal for 9 thru 12 bay single story and 1 thru 22 bay double story.







(17) Landing Roller Pedestal (LRP)

The landing roller pedestal holds the landing roller and receives the launching nose on the far side of the gap. It is used in 9 thru 12 bay SSB's and 1 thru 22 bay DSB's. The height of the roller pedestal is adjusted with a hydraulic jack.

WARNING

Personnel are advised to use extreme care when the pedestal is being raised or lowered. Failure to do so will result in serious bodily injury.

① LUGS. Holds rear of landing roller in position.

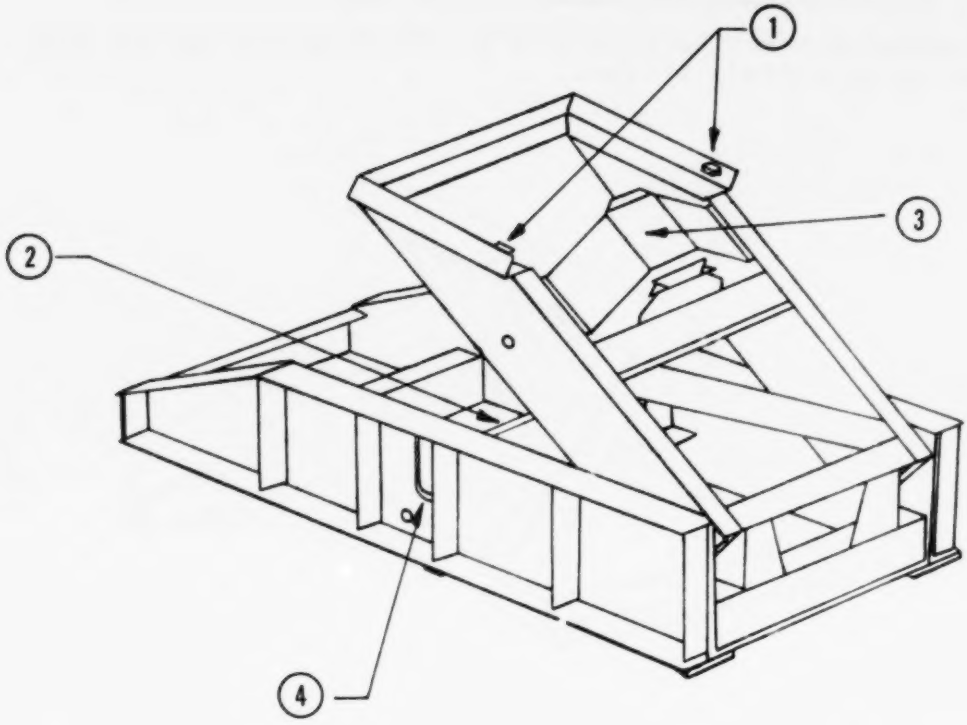
② JACK SEAT. Base for hydraulic jack used to adjust height of upper frame. Pivot mounted to keep jack seated in frame during operation.

③ SADDLE. Fits head of jack. Pivot mounted to keep saddle on jack head during operation.

④ ACCESS HOLES. For safe operation of hydraulic jack.

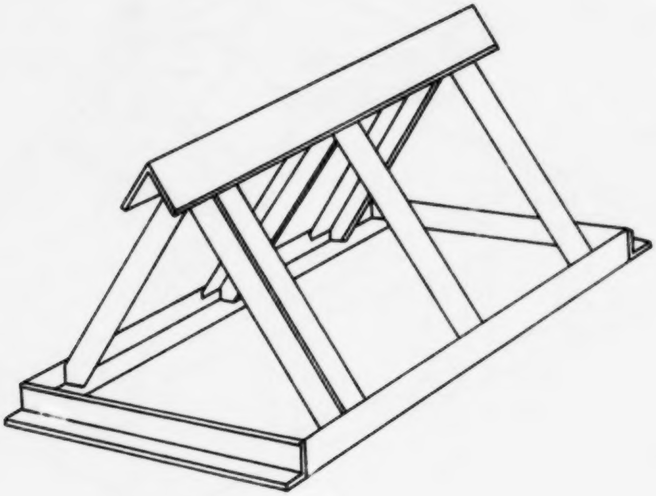
WARNING

DO NOT use any other opening in pedestal as a point to operate jack. DO NOT insert hand in access hole, use the jack handle only to operate the jack. Failure to follow these instructions will result in serious bodily injury.



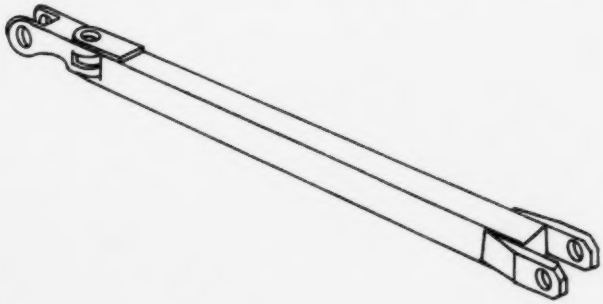
(18) Building Pedestal (BP)

Used under girders to keep bridge off of ground during construction of all single story bridges.



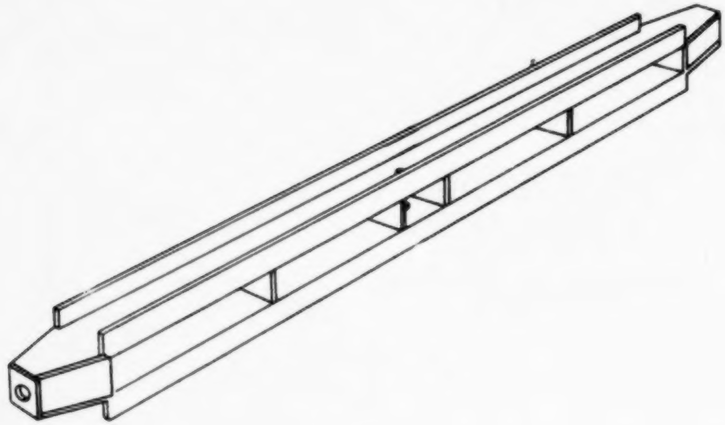
(19) Push Bar (PB) (Short)

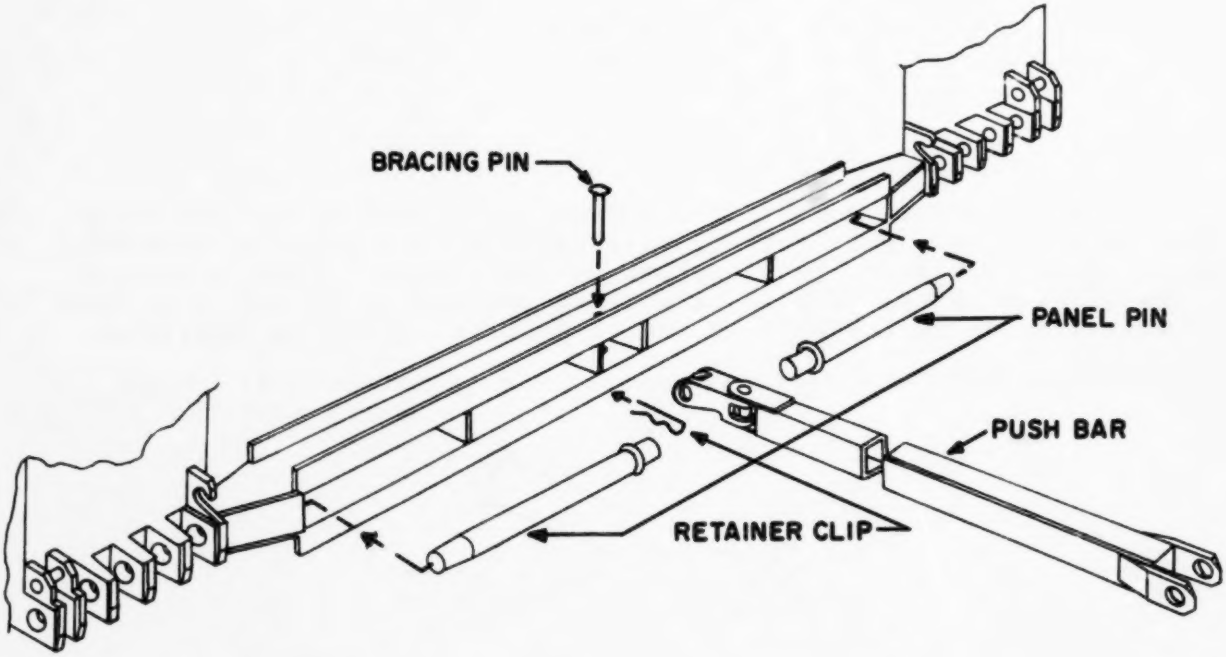
Used to final launch bridges over 8 bay single story. Also used to boom double story bridges over 8 bays long. Used to connect truck to davit post.



(20) Push Bar Cross Girder (PBCG)

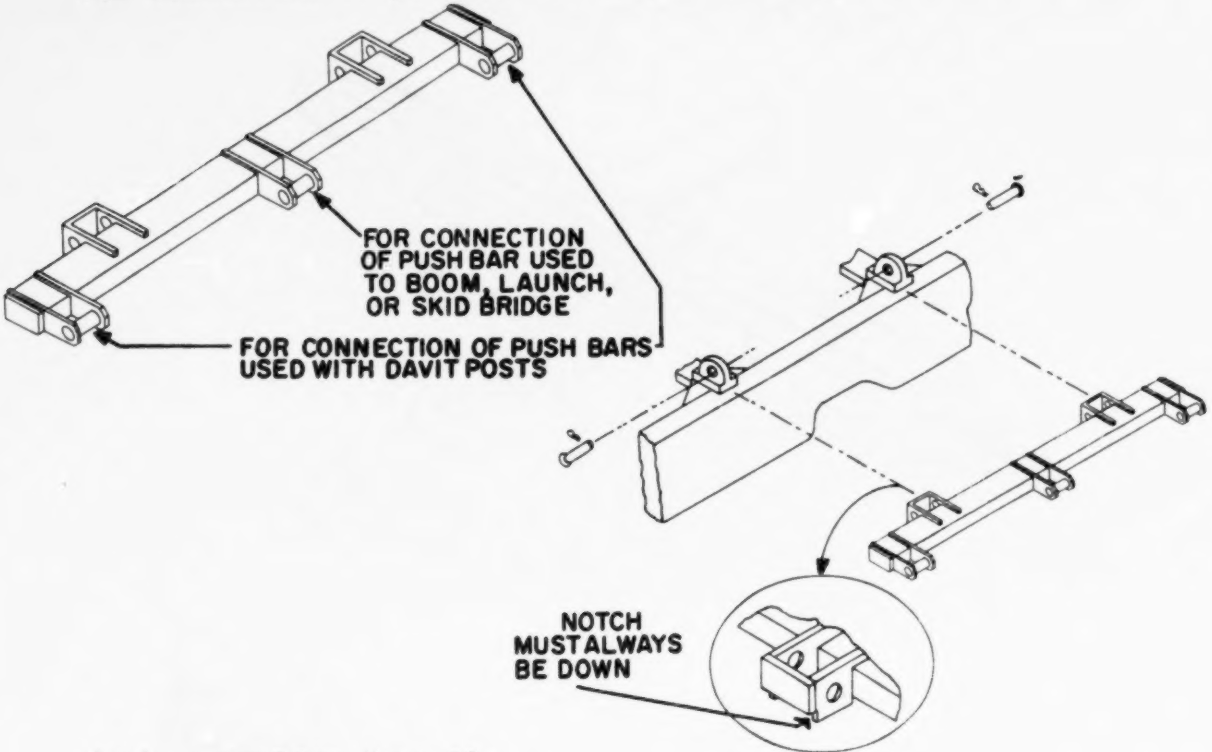
Used to connect push bar to unfinished bridges for booming.





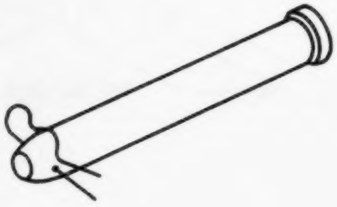
(21) Push Bar Adapter

For connection of push bar to bumper of truck.


FOR CONNECTION OF PUSH BAR USED TO BOOM, LAUNCH, OR SKID BRIDGE
FOR CONNECTION OF PUSH BARS USED WITH DAVIT POSTS
NOTCH MUST ALWAYS BE DOWN

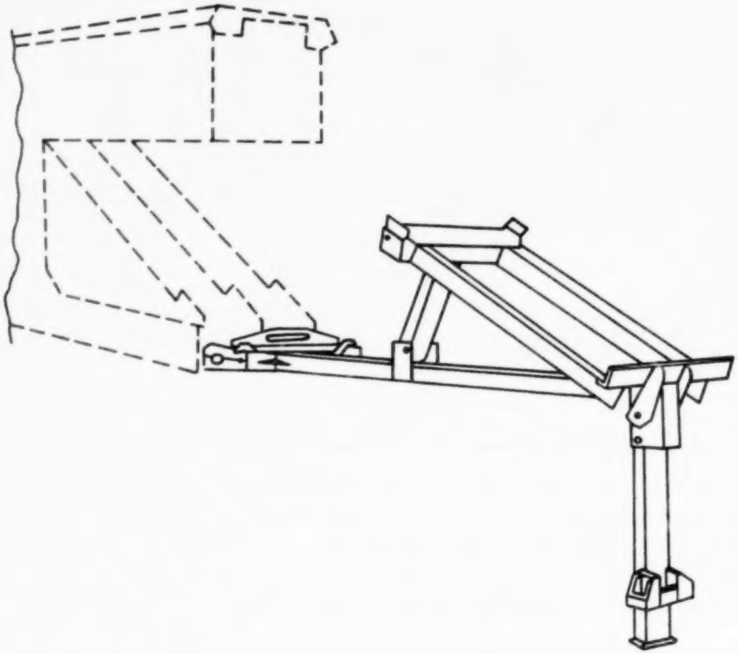
(22) Launching Nose Pin

Used to connect nose sections together. Used to connect light rear nose section, nose roller, push bar and jack posts to bankseat beam. Used to connect jack support to baseplates. Used to connect links to each other, to post tensioning and anchor assemblies. Used in post tensioning assembly to secure post in transit or tensioned positions.



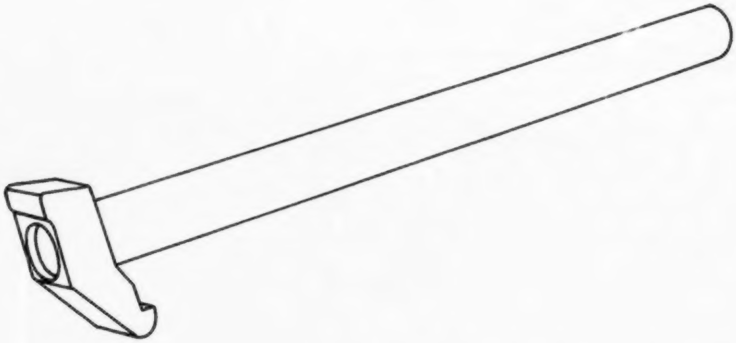
(23) Panel Erection Aid

Used to lift top panels into place in double story bridges.



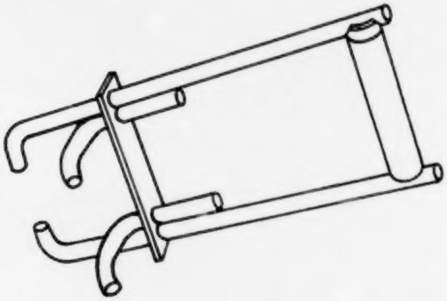
(24) Carrying Bar

Used to lift and carry all panels, bankseat beam, heavy nose sections and long ramps.



(25) Carrying Handles

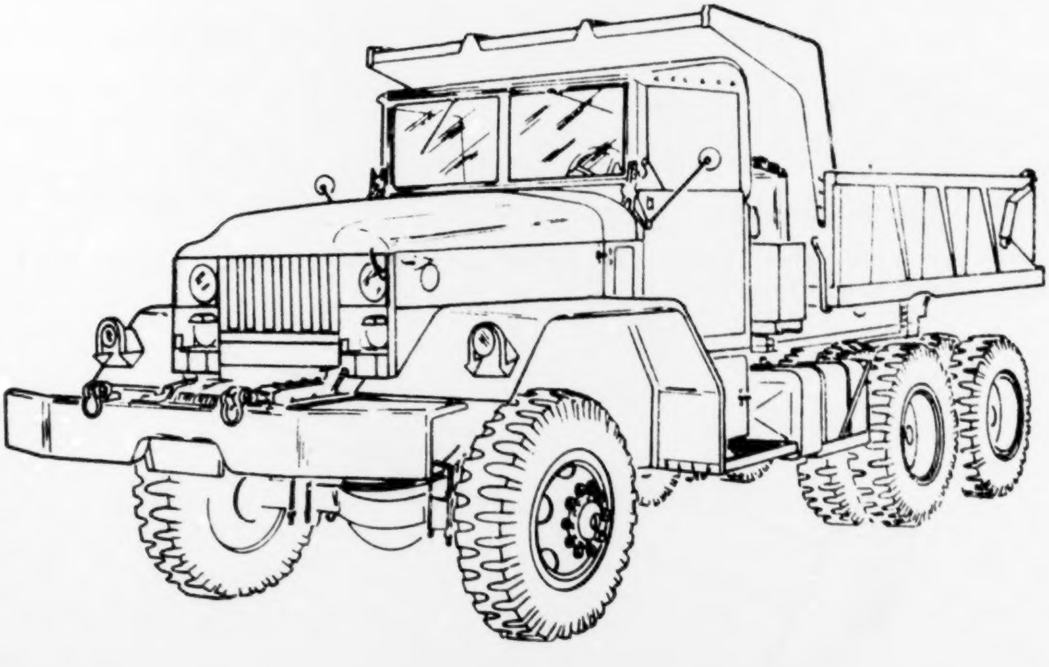
Used to lift and carry deck and ramps.



c. Support Equipment. The support equipment needed to transport, and load/unload the bridge and erection components is illustrated and explained in this section.

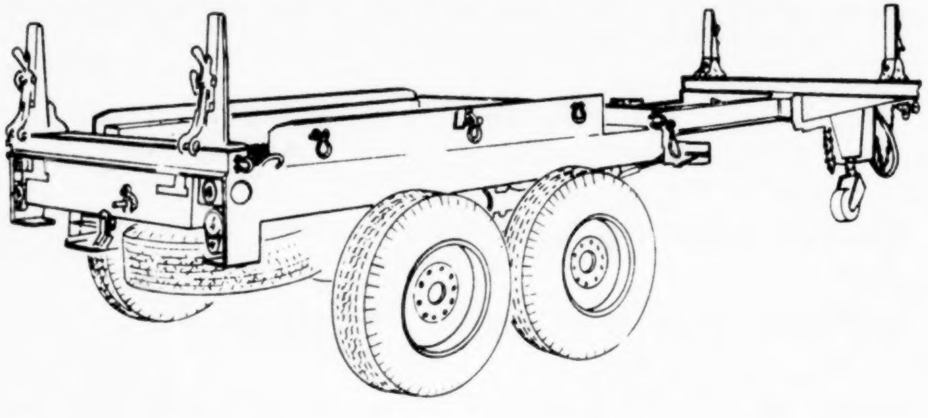
(1) Truck, 5 Ton Dump (Tactical Models)

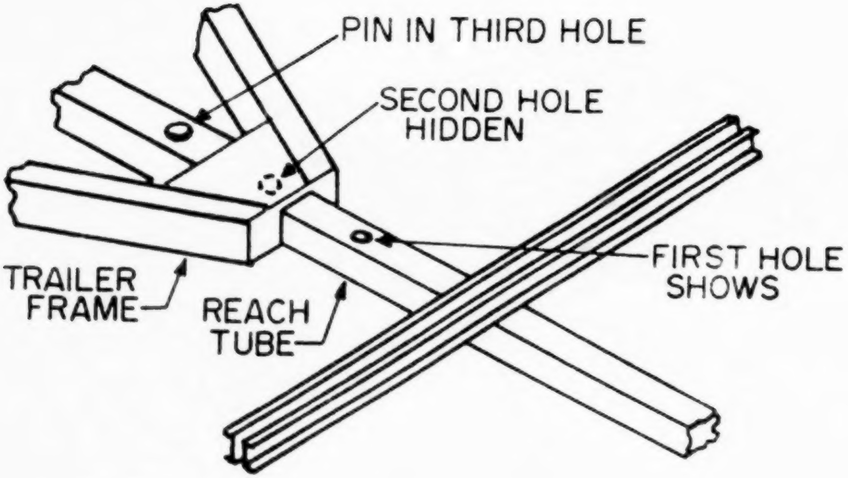
The dump truck is the primary means of transporting one pallet load of bridge components, and for pulling one trailer loaded with components. It is used as the launching vehicle for bridge booming/launching, and retrieval of bridge. For detailed description and maintenance instructions, refer to TM 9-2320-260-10.



(2) Trailer. 4 Ton, M796 (Bolster Trailer)

Used to carry one pallet of bridge parts, when fitted with pallet adapter. For detailed description and maintenance instructions, refer to TM 9-2330-287-14.





(3) Pallet

Used to hold the bridge and erection parts for crane loading of trucks and trailers. Permits fast off-loading of trucks and trailers, by dumping or pulling loads off.

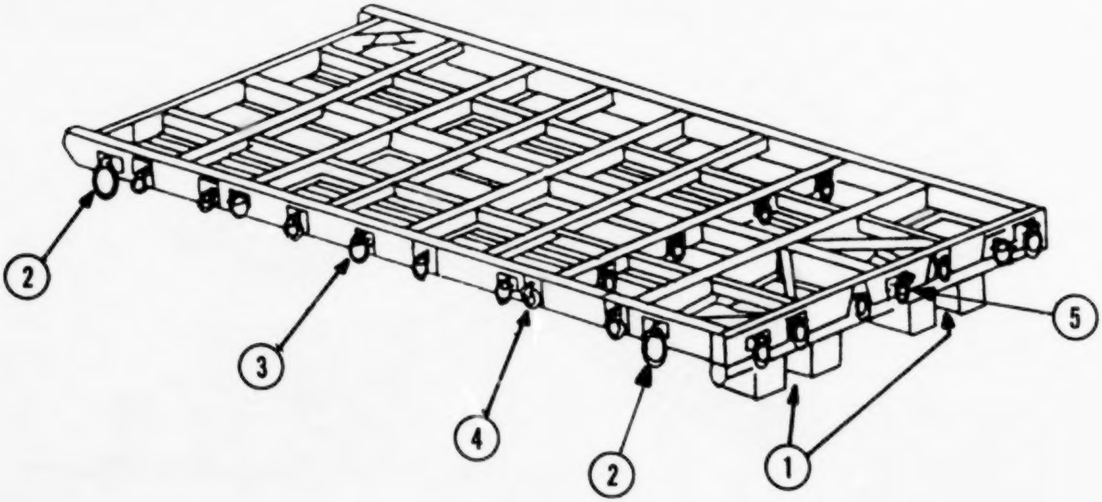
① SHOCK ABSORBER. Absorbs initial shock when rear of pallet hits the ground.

② LIFTING RINGS. Used with lifting slings on crane to lift loaded pallets onto trucks and trailers.

③ TIE-DOWN RINGS. Used to secure pallet on truck or trailer.

④ SHACKLES. Used to hold parts on pallets.

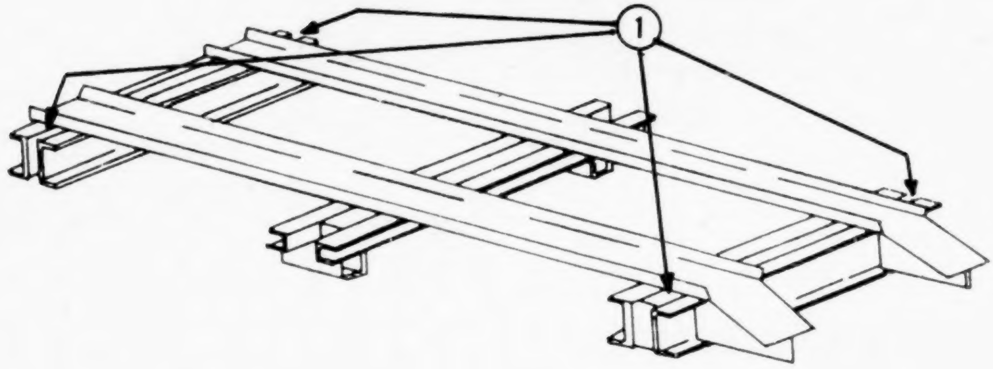
⑤ EXTRACTOR. For connection of extractor cable to remove pallets from trailer, or truck if needed.

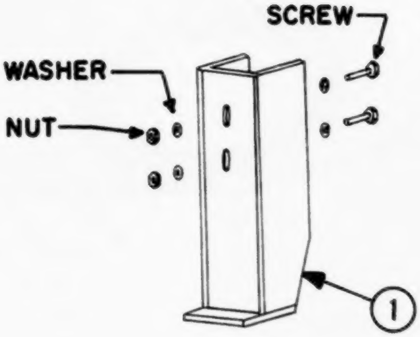


(4) Pallet Adapter

Needed to fit and secure pallet to trailer. Permits trailer to be pulled out from under pallet for off-loading.

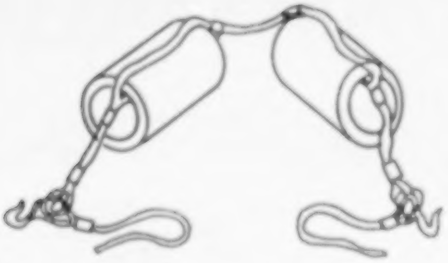
① ADAPTER BRACKETS. Secures adapter to trailer.





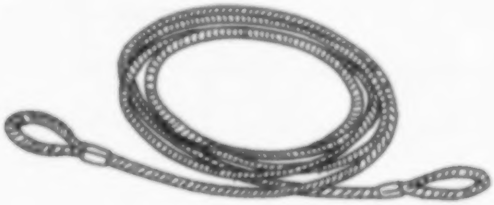
(5) Rubber Bumper

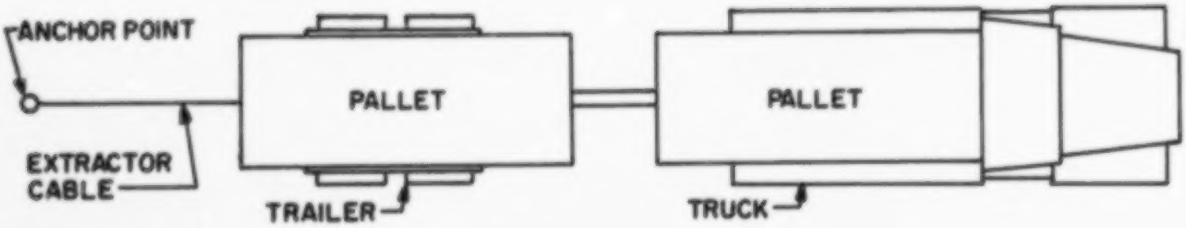
Absorbs shock of pallet falling to ground during off-loading.



(6) Extractor Cable

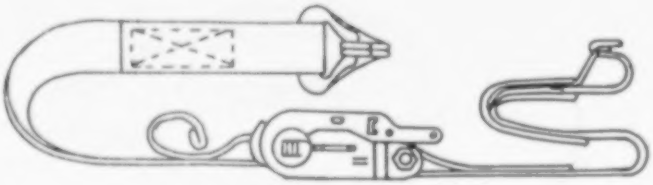
Connects pallet on trailer to stationary object so trailer can be driven out from under pallet.

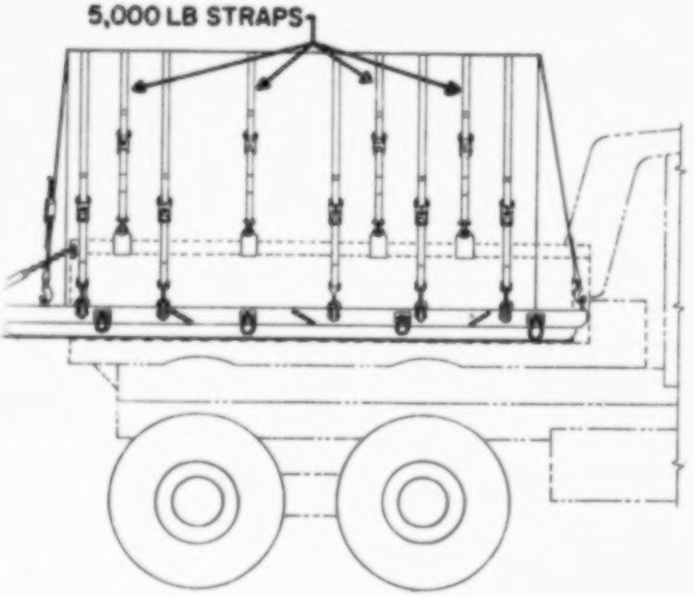


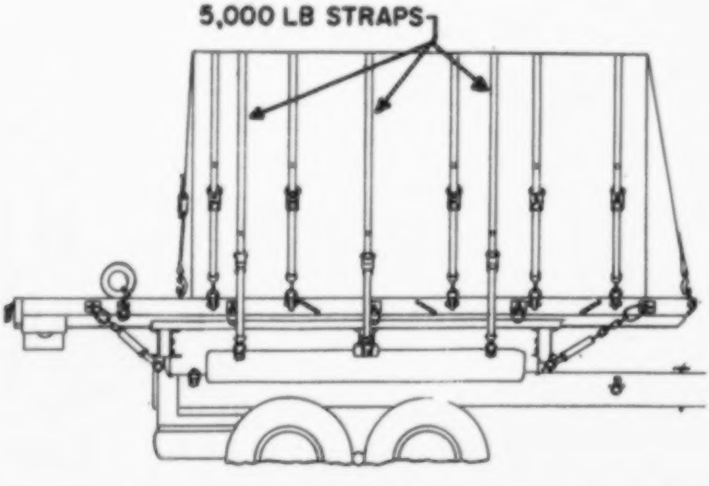


(7) Strap, 5,000 lb

Used to secure loaded pallets on dump truck and trailer. Can also be used to secure landing roller pedestal on tip of nose during launch of bridge.

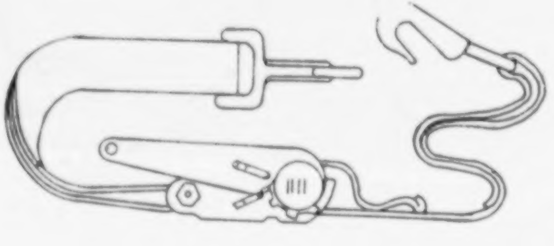


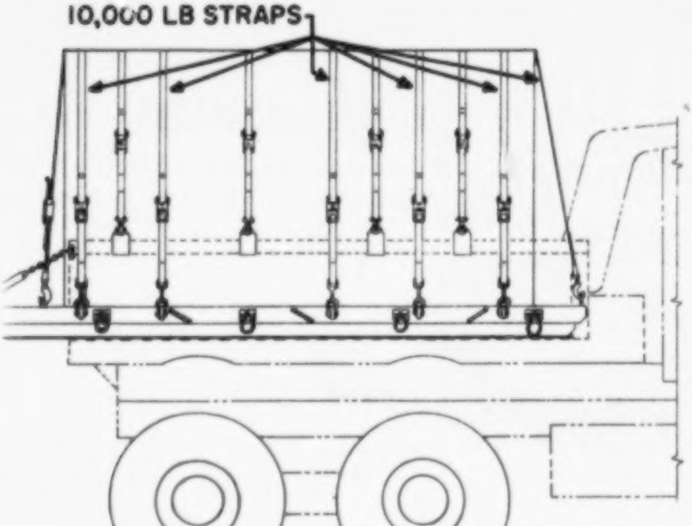


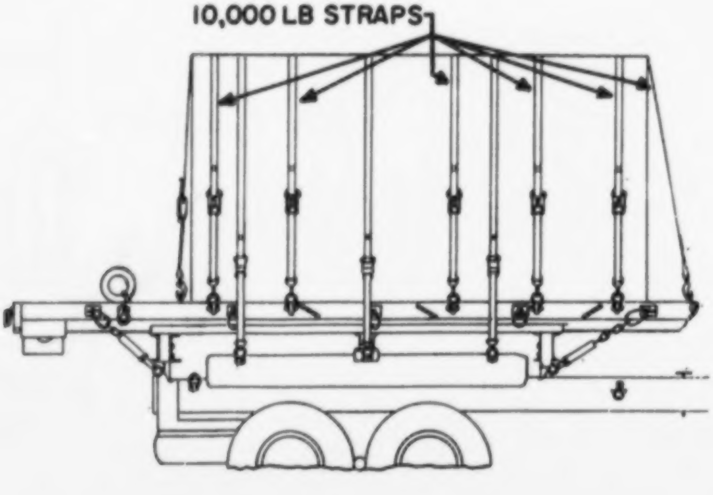


(8) Strap, 10,000 lb

Used to secure components on pallet. Can also be used to secure landing roller pedestal on tip of nose during launch of bridge. Also used around bays of bridge during disassembly of double story on far bank.

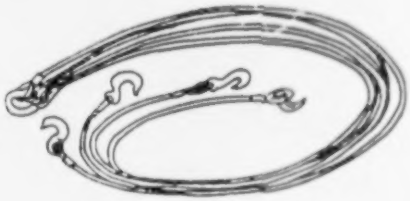


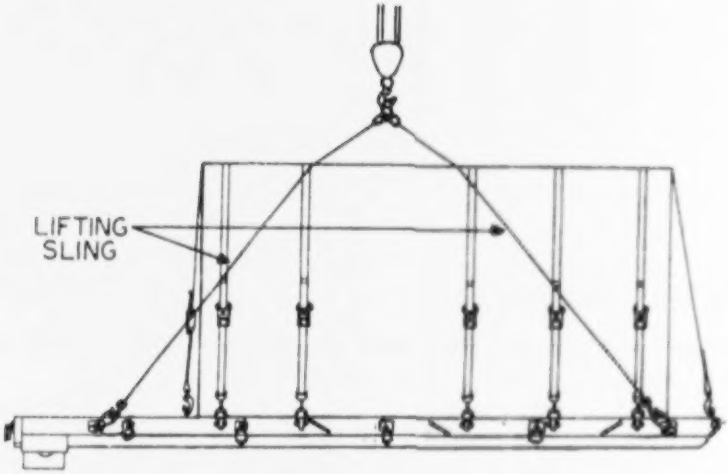




(9) Lifting Sling

Used to lift pallets onto trucks and trailers.



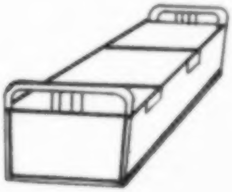


(10) Equipment Bag

Used to hold retainer clips.

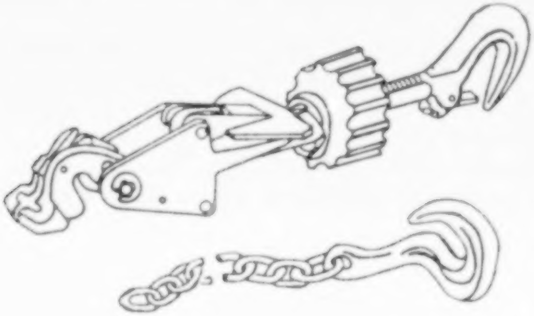
(11) Equipment Basket

Used to hold smaller bridge and erection parts, such as panel pins, nose pins, bracing pins, and jacks.



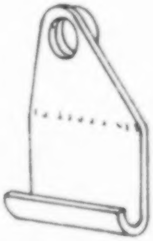
(12) Tie-Down, Cargo, Aircraft, MB-1

Used to secure pallets on truck and trailer.



(13) Tie-Down Lug

Used with 5,000 lb. straps to secure loaded pallets on trucks.

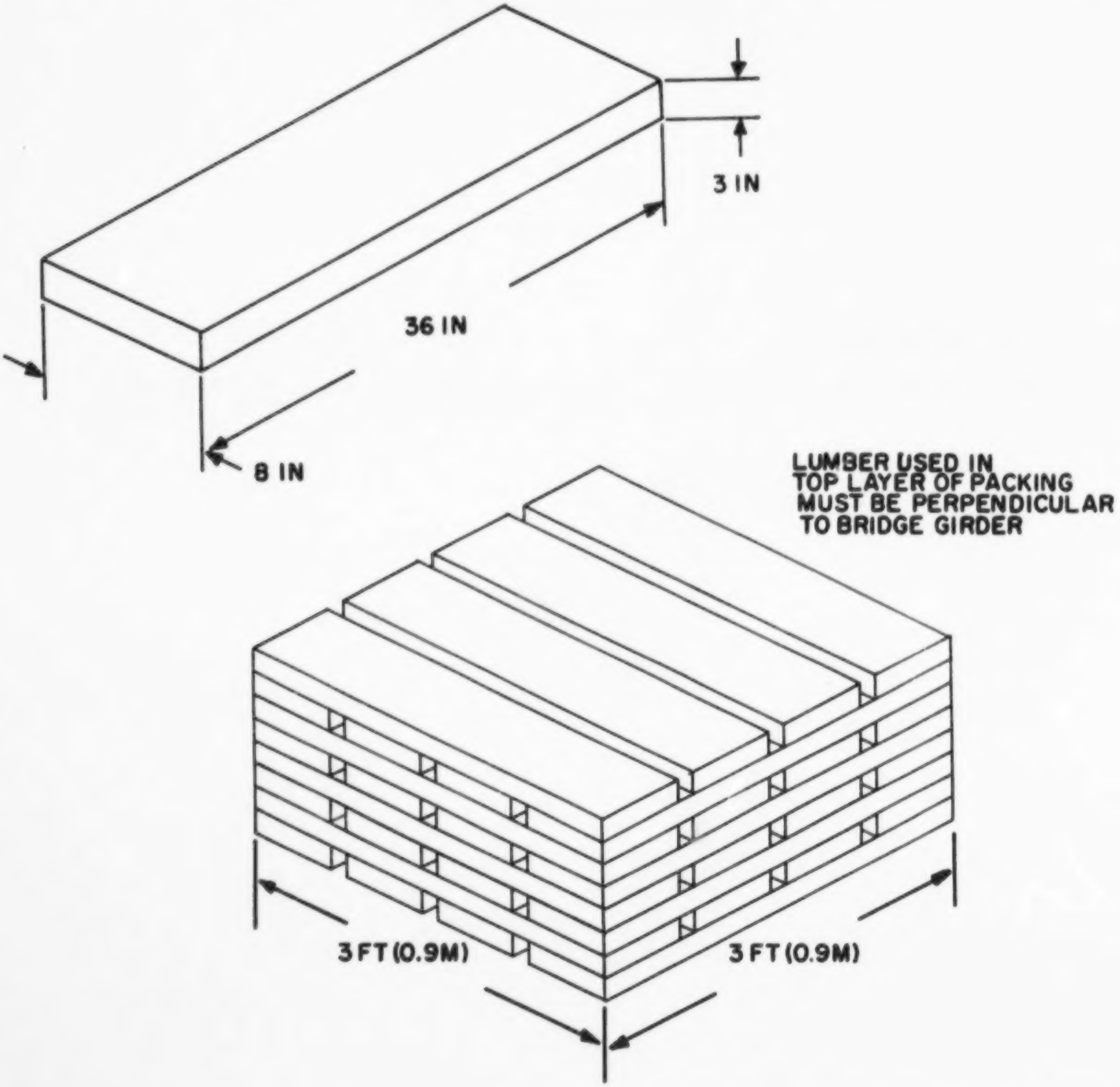


(14) Packing

Used under baseplates, landing roller and pedestal, and the end of bridge to provide solid bearing, and to raise these items off ground when needed. Used in pallet loads to take up space between components so loads can be tightly secured.

This packing is not issued with set, it is procured by using unit through supply channels. Upon receipt it is cut into lengths required.

3 in x 8 in x 36 in (144 pieces)
3 in x 8 in x 84 in (4 pieces) (for use with Link Reinforcement Set)


3 IN
36 IN
8 IN
LUMBER USED IN TOP LAYER OF PACKING MUST BE PERPENDICULAR TO BRIDGE GIRDER
3 FT (0.9M)
3 FT (0.9M)

1-8. EQUIPMENT DATA

WEIGHTS AND DIMENSIONS

Top Panel (TP)

Length	6 ft 4 in (1.93 m) overall 6 ft (1.83 m) effective
Width	2 ft 1-1/2 in (0.65 m) overall
Height	1 ft 9-5/8 in (0.56 m)
Weight	385 lbs (175 kg) Carried by 4 personnel No. in set - 34 (including 2 spares)

Bankseat beam (BSB)

Length	13 ft 3-1/2 in (4.06 m) overall
Width	1 ft 6 in (0.46 m) overall
Height	1 ft 9-3/8 in (0.54 m) overall
Weight	570 lbs (258 kg) Carried by 6 personnel No. in set - 7 (including 1 spare)

Ramp (short)

Length	10 ft 1/2 in (3.09 m) overall 10 ft (3.09 m) effective
Width	1 ft 10 in (0.56 m) overall
Height	9-1/4 in (0.24 m)
Weight	264 lbs (120 kg) Carried by 4 or 6 personnel No. in set - 30 (including 2 spares)

Ramp (long)

Length	14 ft 1/2 in (4.27 m) overall 14 ft (4.27 m) effective
Width	1 ft 10 in (0.56 m) overall
Height	1 ft (0.3 m)
Weight	400 lbs (181.5 kg) Carried by 4 or 6 personnel No. in set - 29 (including 1 spare)

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

Deck

Length	9 ft 1 in (2.77 m) overall
Width	1 ft 5-1/4 in (0.44 m) overall
Height	7-1/8 in (0.18 m)
Weight	163 lbs (74 kg)
	Carried by 2 personnel
	No. in set - 74
	(including 6 spares

Curb

Length	5 ft 11 in (1.8 m)
Width	5-3/8 in (0.14 m)
Height	1 ft 1-1/2 in (0.34 m)
Weight	70 lbs (32 kg)
	Carried by 1 person
	No. in set - 42
	(including 2 spares)

Bridge Guide Marker

Length	4 ft 5 in (1.34 m)
	5 ft 11 in (1.80 m)
Weight	15 lbs (7 kg)
	No. in set - 24

Bottom Panel (BP)

Length	6 ft 5 in (1.96 m) overall
	6 ft (1.83 m) effective
Width	2 ft 3 in (0.69 m)
Height	3 ft 7-3/8 in (1.1 m)
Weight	435 lbs (197 kg)
	Carried by 4 personnel
	No. in set - 26
	(including 2 spares)

Junction Panel (JP)

Length	3 ft 5-1/4 in (1.07 m) overall
	3 ft (0.9 m) effective
Width	2 ft 1-1/2 in (0.65 m)
Height	5 ft (3/4 in (1.54 m)
Weight	478 lbs (217 kg)
	Carried by 4 personnel
	No. in set - 5
	(including 1 spare)

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

End Taper Panel (ETP)

Length	13 ft 2-5/8 in (4.03 m) overall
Width	2 ft 4 in (0.71 m)
Height	1 ft 5-3/4 in (0.46 m)
Weight	600 lbs (272 kg) Carried by 6 personnel No. in set - 5 (including 1 spare)

Sway Brace

Length	10 ft 1-3/4 in (3.08 m)
Diameter	3-3/8 in (8.57 cm)
Weight	36 lbs (16 kg) No. in set - 19 (including 3 spares)

Panel Pin

Length	2 ft 4-1/2 in (0.73 m)
Diameter	1-3/4 in (4.44 cm)
Weight	19 lbs (8.5 kg) No. in set - 92 (bridge) 20 (erection)

Headless Panel Pin

Length	2 ft 5 in (0.74 m)
Diameter	1-3/4 in (4.44 cm)
Weight	19 lbs (8.5 kg) No. in set - 5 (including 1 spare)

Bracing Pin

Length	7-1/4 in (0.18 m)
Diameter	1 in (2.54 cm)
Weight	1-1/2 lbs (0.75 kg) No. in set - 68 (bridge) 8 (erection)

Retainer Clip

Length	4-1/8 in (0.1 m)
Weight (bag of 50)	2 lbs (1 kg) No. in set - 94 (bridge) 56 (erection)

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

Single Story Baseplate

Length	2 ft 3/8 in (0.61 m)
Width	1 ft 5-1/4 in (0.45 m)
Height	7-3/4 in (0.20 m)
Weight	32 lbs (14.5 kg) No. in set - 7 (including 1 spare)

Double Story Baseplate

Length	5 ft 4 in (1.63 m)
Width	1 ft 11 in (0.59)
Height	6-3/4 in (0.16 m)
Weight	93 lbs (42 kg) No. in set - 6 (including 2 spares)

Fixed Support

Length	1 ft (0.3 m)
Width	1 ft 4-1/2 in (0.41 m)
Height	9-1/2 in (1.25 m)
Weight	14 lbs (6.25 kg) No. in set - 7 (including 1 spare)

Adjustable Support

Length	5 ft 5 in (1.65 m)
Width	7 in (0.17 m)
Height	3 ft 8 in (1.12 m)
Weight	143 lbs (65 kg) Carried by 2 personnel No. in set - 6 (including 2 spares)

Frame Cross Girder

Length	14 ft 3-1/4 in (4.34 m)
Width	1 ft 8 in (0.51 m)
Height	1 ft 3 in (0.38 m)
Weight	171 lbs (77.5 kg) Carried by 2 personnel No. in se - 3 (including 1 spare)

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

Roller Beam (RB)

Length	15 ft 5-1/2 in (4.71 m)
Width	11 in (0.28 m)
Height	1 ft 5-7/8 in (0.45)
Weight	320 lbs (145 kg) Carried by 4 personnel No. in set - 4 (including 1 spare)

Hydraulic Jack (15 ton)

Height	1 ft 7 in (0.48 m) Minimum 2 ft 8 om (0.78 m) Extended
Weight	47 lbs (21 kg) No. in set - 7 (including 2 spares)

Jack Seat

Length	9-1/4 in (0.24 m)
Width	1 ft (0.3 m)
Height	5 in (0.13 m)
Weight	6 lbs (3 kg) No. in set - 5 (including 1 spare)

Jack Post

Height	2 ft 10-3/4 in (0.88 m)
Width	6 in (0.15 m)
Depth	11 in (0.3 m)
Weight	43 lbs (19.5 kg) No. in set - 4 (including 1 spare)

Jack Support

Height	1 ft 3 in (0.38 m)
Width	9 in (0.23 m)
Depth	10-1/2 in (0.26 m)
Weight	12 lbs (5.5 kg) No. in set - 5 (including 1 spare)

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

Light Launching Nose Front

Length	10 ft (3.05 m)
Width	1 ft 3 in (0.38 m)
Height	8-1/2 in (0.22 m)
Weight	97 lbs (44 kg)
	Carried by 2 personnel
	No. in set - 5 (including 2 spares)

Light Launching Nose Rear

Length	10 ft 3-1/2 in (3.14 m) overall 10 ft (3.05 m) effective
Width	1 ft 6-1/2 in (0.47 m)
Height	1 ft 9-3/8 in (0.54 m)
Weight	148 lbs (67 kg)
	Carried by 2 personnel
	No. in set - 5 (including 2 spares)

Launching Nose Heavy (LNH)

Length	10 ft 4-3/4 in (3.17 m) overall 10 ft (3.05 m) effective
Width	1 ft 7 in (0.48 m)
Height	2 ft 1 in (0.63 m)
Weight	386 lbs (175 kg)
	Carried by 4 personnel
	No. in set - 8 (including 2 spares)

Launching Nose Roller (LNR)

Height	2 ft 9-3/4 in (0.86 m)
Width	2 ft 1 in (0.64 m)
Depth	7 in (0.2 m)
Weight	62 lbs (28 kg)
	No. in set - 2 (including 1 spare)

Launching Nose Cross Girder (LNCG)

Length	8 ft 7-1/2 in (2.63 m)
Width	10-1/4 in (0.26 m)
Height	1 ft 6 in (0.5 m)
Weight	157 lbs (71 kg)
	Carried by 2 personnel
	No. in set - 2 (including 1 spare)

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (cont).

Launching Nose Cross Girder Post

Length	5 ft 10 in (1.8 m)
Width	4 in (0.1 m)
Height	7-1/4 in (0.2 m)
Weight	32 lbs (14.5 kg)
	No. in set - 4 (including 2 spares)

Landing Roller (LR)

Length	1 ft 4 in (0.4 m)
Width	1 ft 10-1/2 in (0.57 m)
Height	11 in (0.28 m)
Weight	61 lbs (27.5 kg)
	No. in set - 4 (including 1 spare)

Landing Roller Pedestal (LRP)

Length	5 ft 7-1/2 in (1.73 m)
Width	2 ft 6-1/2 in (0.8 m)
Height	1 ft (0.3 m)
Weight	215 lbs (87.5 kg)
	Carried by 4 personnel
	No. in set - 2 (including 1 spare)

Building Pedestal (BP)

Length	2 ft 1/2 in (0.62 m)
Width	1 ft 7 in (0.48 m)
Height	1 ft 4 in (0.41 m)
Weight	16 lbs (7.25 kg)
	No. in set - 7 (including 1 spare)

Push Bar (PB) (SHORT)

Length	10 ft 7-1/4 in (3.23 m)
Width	4 in (0.1 m)
Depth	4 in (0.1 m)
Weight	95 lbs (43 kg)
	No. in set - 2 (including 1 spare)

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

Push Bar Cross Girder (PBCG)

Length	9 ft 3-1/4 in (2.83 m)
Width	6 in (0.15 m)
Depth	10 in (0.25 m)
Weight	86 lbs (39 kg)
	No. in set - 2 (including 1 spare)

Push Bar Adapter

Length	4 ft 3 in (1.30 m)
Width	1 ft 3/4 in (0.32 m)
Height	3-1/4 in (0.08 m)
Weight	100 lbs (45 kg)
	No. in set - 2 (including 1 spare)

Launching Nose Pin

Length	1 ft 5-1/8 in (0.44 m)
Diameter	1-1/4 in (0.03 m)
Weight	6 lbs (2.75 kg)
	No. in set - 23

Panel Erection Aid

Length	11 ft 2 in (3.35 m)
Width	1 ft 11-3/4 in (3.40 m)
Height	1 ft (0.30 m)
Weight	69 lbs (31 kg)
	Carried by 2 personnel
	No. in set - 3 (including 1 spare)

Carrying Bar

Length	2 ft 4-1/2 in (0.72 m)
Diameter	1-3/4 in (4.44 cm)
Weight	4 lbs (2 kg)
	No. in set - 46

Carrying Handle

Length	1 ft 3/8 in (0.32 m)
Width	5-1/2 in (0.14 m)
Weight	1.25 lbs (0.5 kg)
	No. in set - 46

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

Pallet

Length	14 ft 3 in (4.34 m) overall 14 ft (4.27 m) effective
Width	6 ft 9-1/4 in (2.06 m) overall 6 ft 4 in (1.93 m) effective
Height	1 ft (0.30 m)
Weight	710 lbs (322 kg)
	Carried by 8 personnel (minimum)
	No. in set - 25 (including 1 spare)

Pallet Adapter

Length	9 ft 1 in (2.77 m)
Width	4 ft 10 in (1.47 m)
Height	10 in (0.25 m)
Weight	400 lbs (181 kg)
	Carried by 4 personnel
	No. in set - 12

Rubber Bumper

Weight	86 lbs (39 kg)
	No. in set - 25 (including 1 spare)

Extractor Cable

Length	20 ft (6.10 m)
Weight	22 lbs (10 kg)
	No. in set - 1

Strap, 5,000 lbs

Length	21 ft 8 in (6.60 m)
Weight	4 lbs (2 kg)
	No. in set - 100

Strap, 10,000 lbs

Length	23 ft (7.01 m)
Weight	6 lbs (3 kg)
	No. in set - 100

Lifting Sling

Length	16 ft (4.88 m)
Weight	150 lbs (68 kg)
	No. in set - 1

1-8. EQUIPMENT DATA (Cont).

WEIGHTS AND DIMENSIONS (Cont).

Equipment Bag

Length	1 ft 2 in (0.36 m)
Width	10 in (0.25 m)
Weight	5/8 lb (0.25 kg)
	No. in set - 8 (bridge) 2 (erection)

Equipment Basket

Length	4 ft 4-1/2 in (1.33 m)
Width	1 ft 2-2/4 in (0.37 m)
Height	1 ft (0.30 m)
Weight	62 lbs (28 kg)
	No. in set - 14 (bridge) 6 (erection)

Tie-Down Lug

Length	7-1/4 in (0.18 m)
Width	4 in (0.10 m)
Weight	2 lbs (1 kg)
	No. in set - 104

Packing Timber

Dimension	3 in x 8 in x 36 in (7.6 cm x 25.4 cm x 0.9 m)
Weight	20 lbs (10 kg)
	No. in set - 144

(For use under bridge as packing to increase bearing)

Dimension	3 in x 8 in x 84 in (7.6 cm x 25.4 cm x 2.3 m)
Weight	50 lbs (25 kg)
	No. in set - 6

(For use as packing skid when constructing bridges with LRS)

Anchorage Pin Assembly *

Length	2 ft 9-7/8 in (0.86 m)
Diameter	1-3/4 in (0.04 m)
Weight	26 lbs (12 kg)
	No. in set - 10 (including 2 spares)

* This item transferred from Link Reinforcement Set.

CHAPTER 2
OPERATION/INSTALLATION INSTRUCTIONS

SECTION I. PREPARATION FOR OPERATION/INSTALLATION

	PARAGRAPH	PAGE
Preliminary Studies	2-1	2-1
Site Selection	2-2	2-1
Reconnaissance Report	2-3	2-7
Choice of Bridge Length And Class	2-4	2-7
Bridge Construction Times	2-5	2-10
Work Party Required	2-6	2-10
Design	2-7	2-10

OVERVIEW

This section provides the information needed to select the best site for the bridge, determine the length and class of the bridge, perform bridge design, and assemble/disassemble all Medium Girder Bridges (MGB) without reinforcement.

2-1. PRELIMINARY STUDIES.

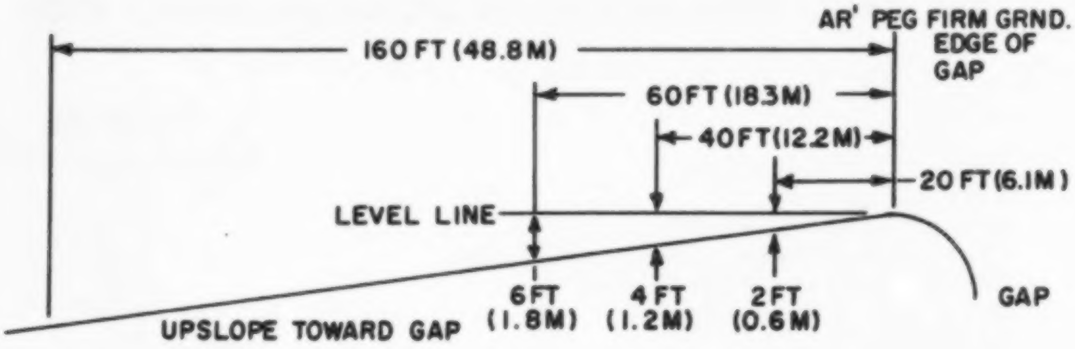
A thorough evaluation of information from preliminary studies may aid the reconnaissance by limiting it to a few suitable sites. Sources of preliminary information are intelligence studies and reports, interviews with local civilians, maps, aerial photographs, and personal aerial reconnaissance.

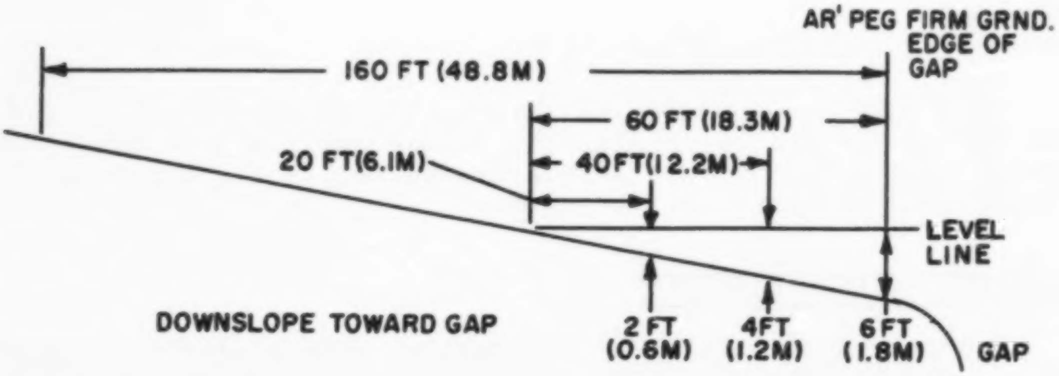
2-2. SITE SELECTION.

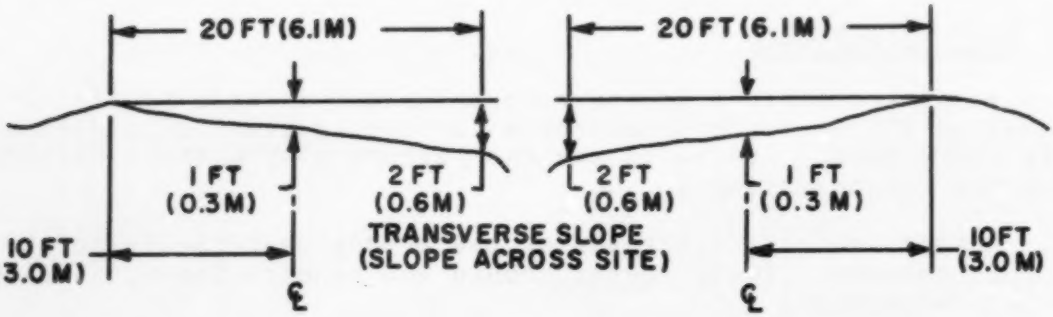
Whenever possible a ground reconnaissance is made to find a site that has selection factors desirable for construction of single or double story MGBs. Following are the factors that must be considered during the reconnaissance:

a. Access routes at each end of the bridge that tie in to the main road network. These routes should not require too much maintenance or preparation.

b. Approaches requiring little preparation. Should be two lanes wide and straight for 160 ft (48.8 m) at each end of the bridge. Slope of the approach should not exceed 1 in 10. Transverse (side to side) slope should not exceed 1 in 10 in the first 60 ft (18.3 m) measured from the AR peg.







c. Firm and stable banks of about equal height. The difference in bank height can not exceed 10 percent of the gap width, as the bridge is restricted to a 1 in 10 slope.

(1) Table 2-1 gives maximum height difference for maximum gap widths of bridges that can be built.

Table 2-1. Bank Height Difference.

Maximum Gap Width		Bridge Length No. of Bays Single Story	Maximum Bank Height Difference*	
ft	m		ft	m
20	6.1	4	2.0	0.61
26	7.9	5	2.6	0.79
32	9.8	6	3.2	0.98
38	11.6	7	3.8	1.16
44	13.4	8	4.4	1.34
50	15.2	9	5.0	1.52
56	17.1	10	5.6	1.71
62	18.9	11	6.2	1.89
74	20.7	12	7.4	2.07
		2E + No. of Bays Double Story		
29.5	8.9	1	2.95	0.89
35.5	10.8	2	3.55	1.08
41.5	12.6	3	4.15	1.26
47.5	14.5	4	4.75	1.45
53.5	16.3	5	5.35	1.63
59.5	18.1	6	5.95	1.81
65.5	20.0	7	6.55	2.00
71.5	21.8	8	7.15	2.18
77.5	23.6	9	7.75	2.36
83.5	25.5	10	8.35	2.55
89.5	27.3	11	8.95	2.73
95.5	29.1	12	9.55	2.91

* = These height differences are measured at AR Pegs.

(2) Banks at expected bearing points of bridge should have a Soil Bearing Capacity (SBC) of 2 tons per square foot. Table 2-2 lists SBC of various types of soil.

Table 2-2. Soil Bearing Capacity.

Soil Description	Bearing values in tons per square foot
Hardpan overlaying rock	12
Very compact sandy gravel	10
Loose gravel and sandy gravel, compact sand and gravelly sand; very compact sand-in-organic silt soils	6
Hard dry consolidated clay	5
Loose coarse to medium sand, medium compact fine sand	4
Compact sand clay	3
Loose fine sand, medium compact sand-inorganic silt soils	2
Firm or stiff clay	1.5*
Loose saturated sand-clay soils, medium soft clay	1*

* Bridges constructed on this type of soil will require packing under ETP to spread weight of bridge. Watch settling during crossing of traffic, and increase packing if needed. Packing material required is 3 in x 8 in x 36 in lumber.

d. Size of Construction Site:

(1) Types of Sites:

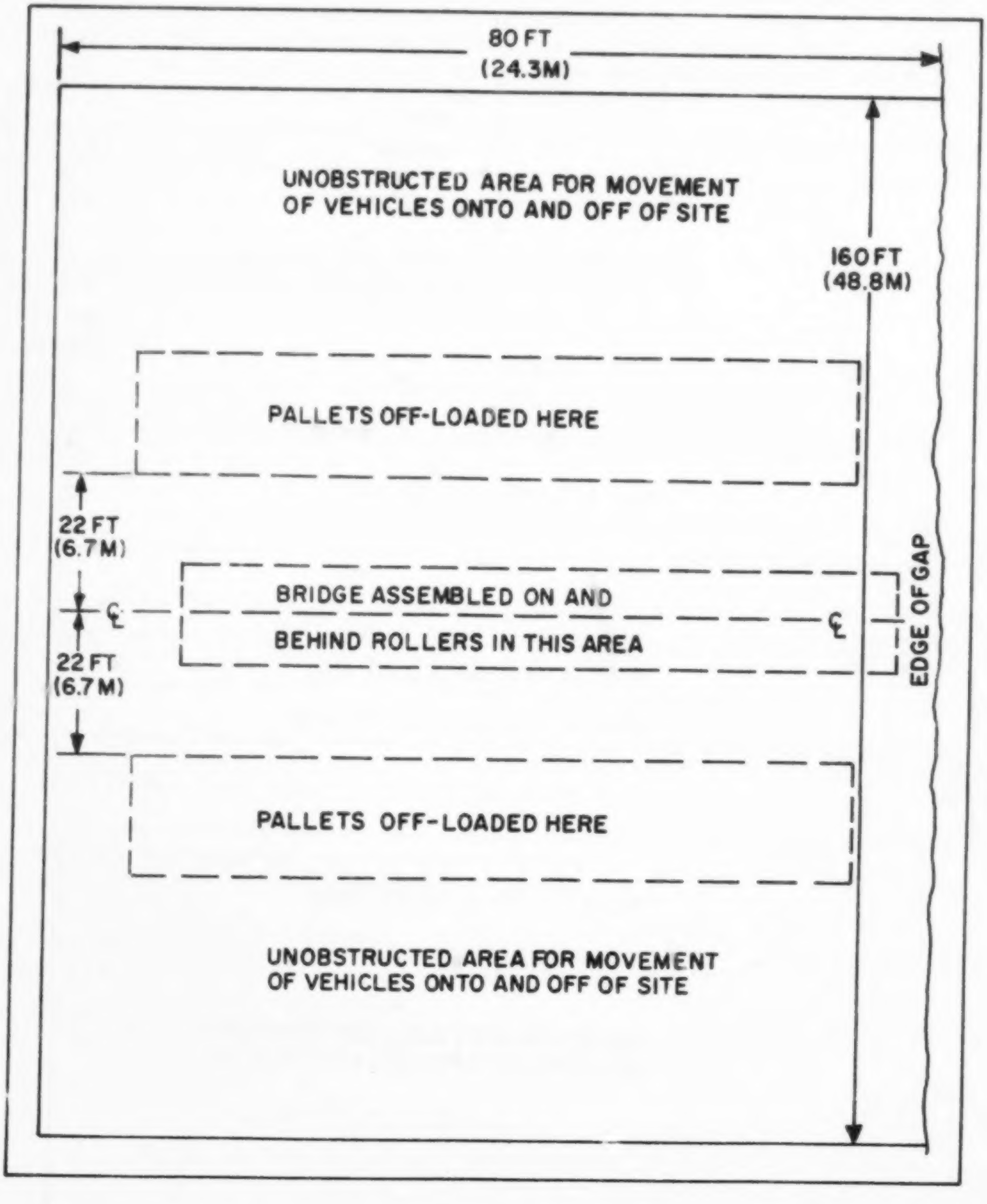
(a) Normal - Provides construction space that allows fast and easy construction.

(b) Restricted - Construction space reduced, requiring special construction procedures such as: longer launching nose, counterweights and more frequent booming of the bridge.

(2) Single Story Assembly Site.

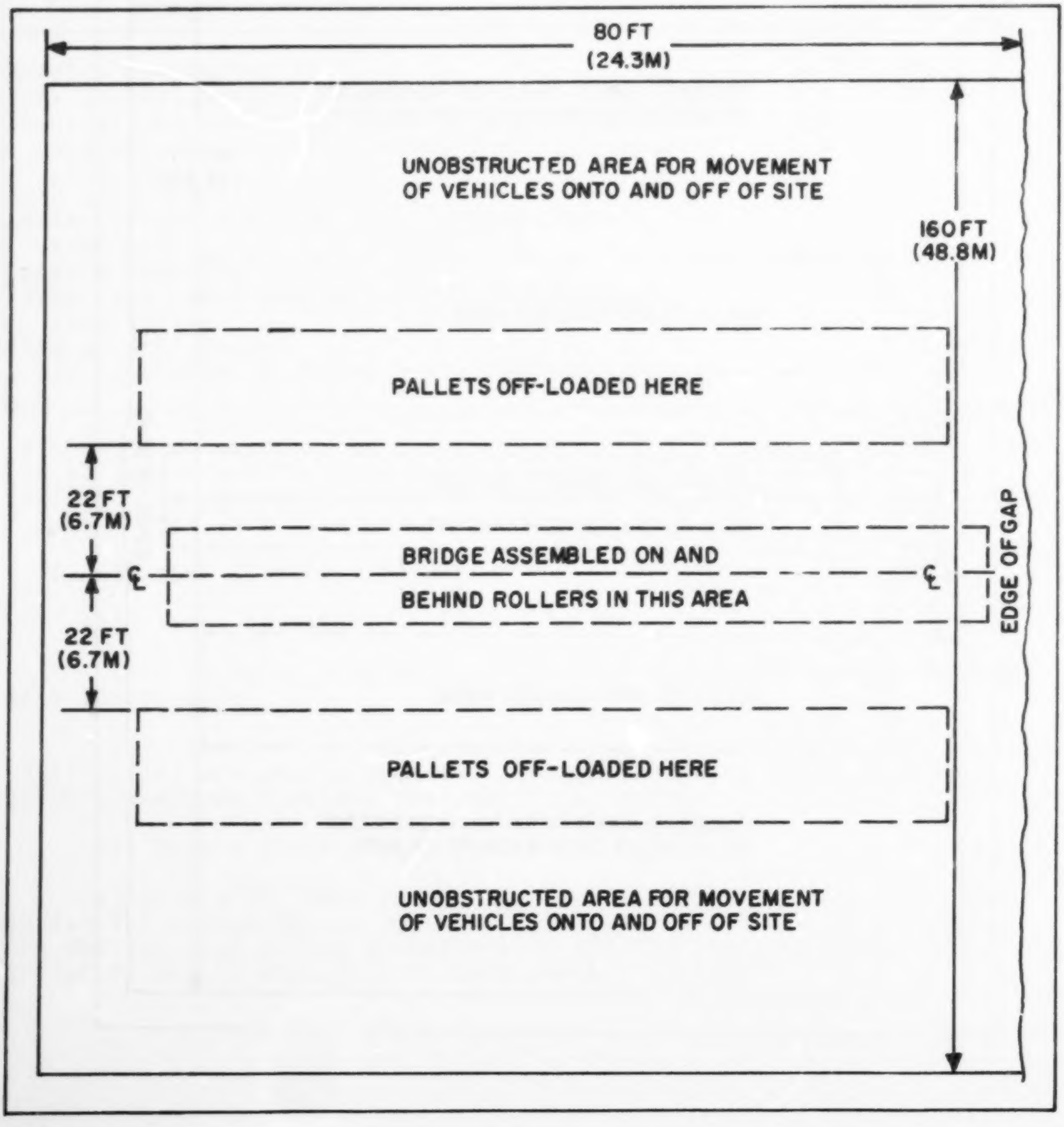
Assembly site large enough for assembly of the bridge and wide enough for unloading and positioning of the loaded bridge pallets. The desired size of the assembly site for the longest single story bridge is 160 ft wide x 80 ft long (48.8 m x 24.3 m).

This length includes the R distance and truck with push bar attached. The width allows for ample construction space and good spacing of pallets from centerline. If needed, this area can be reduced considerably by bringing in pallet loads one at a time or as needed. The desired size of a site is shown below.


80 FT
(24.3M)
UNOBSTRUCTED AREA FOR MOVEMENT OF VEHICLES ONTO AND OFF OF SITE
160 FT
(48.8M)
PALLETS OFF-LOADED HERE
22 FT
(6.7M)
℄
BRIDGE ASSEMBLED ON AND BEHIND ROLLERS IN THIS AREA
℄
EDGE OF GAP
22 FT
(6.7M)
PALLETS OFF-LOADED HERE
UNOBSTRUCTED AREA FOR MOVEMENT OF VEHICLES ONTO AND OFF OF SITE

(3) Double Story Assembly Site.

Assembly site large enough for assembly of the bridge and wide enough for unloading and positioning of the loaded bridge pallets. The desired size of the assembly site for the longest double story bridge is 160 ft wide x 160 ft long (48.8 m x 48.8 m). This length includes the R distance and truck with push bar attached. The width allows for ample construction space and good spacing of pallets from centerline. If needed, this area can be reduced considerably by bringing in pallet loads one at a time or as needed. The desired size of a site is shown below.


80 FT
(24.3M)
UNOBSTRUCTED AREA FOR MOVEMENT OF VEHICLES ONTO AND OFF OF SITE
160 FT
(48.8M)
PALLETS OFF-LOADED HERE
22 FT
(6.7M)
BRIDGE ASSEMBLED ON AND BEHIND ROLLERS IN THIS AREA
℄
℄
EDGE OF GAP
22 FT
(6.7M)
PALLETS OFF-LOADED HERE
UNOBSTRUCTED AREA FOR MOVEMENT OF VEHICLES ONTO AND OFF OF SITE

e. Height of banks above flowing water.

(1) For single story bridges. The bank heights above flowing water or obstructions in the gap should be a minimum of 2 ft (0.6 m).

(2) For double story bridges (2E + 1 thru 2E + 12 bay). The bank heights above flowing water or obstructions in the gap should be a minimum of 3.1 ft (0.95 m).

f. An area large enough to allow the trucks and bolster trailers to completely turn around so that they can back into the site.

g. Vehicle park: A covered and concealed area, located from .3 to 3.1 miles (.5 to 5 kms) behind the bridge site, in which the trucks and trailers can be parked after off loading.

2-3. RECONNAISSANCE REPORT.

a. Before any attempt is made to begin installation of any size MGB, the unit that will construct the bridge should be furnished a reconnaissance report. This report must contain the following information as a minimum. Minimum information will be used to determine length and type of bridge.

(1) Location of the site - map coordinates or specific directions from the base camp to the site.

(2) Width of gap (AR Gap) on bridge centerline - The unit must know the AR Gap in order to plan the mission, as the military load class (MLC) and the AR Gap will be applied to tables to determine the length and type of bridge needed.

b. If only the minimum information is provided, bridge unit personnel will have to conduct a reconnaissance to obtain elevations, site conditions and other design related information.

2-4. CHOICE OF BRIDGE LENGTH AND CLASS.

a. Bridge Length. Use the AR Gap from the reconnaissance report to find the length of bridge in Table 2-3.

b. Bridge Class. The Military Load Class (MLC) is given in Table 2-3 for all bridge lengths and configurations.

Table 2-3. Bridge Length vs AR Gap Ranges.

AR Gap Ranges				Single Story Number of Bays	Bridge Length		Nose Construction Site Condition		R Distance * Site Condition				Military Load Class (MLC)
Minimum		Maximum							Normal		Restricted		
ft	m	ft	m		ft	m	Normal	Restricted	ft	m	ft	m	
12	3.7	20	6.1	4	26	7.9	LLN	---	19	5.8	---	---	60
18	5.6	26	7.9	5	32	9.8	LLN	---	22	6.7	---	---	60
24	7.4	32	9.8	6	38	11.6	LLN	---	25	7.6	---	---	40
30	9.2	38	11.6	7	44	13.4	LLN	---	31	9.4	---	---	30
36	11.0	44	13.4	8	50	15.2	LLN	---	37	11.3	---	---	30
42	12.9	50	15.2	9	56	17.1	5N1	6N1	34	10.4	27	8.2	24
48	14.7	56	17.1	10	62	18.9	5N1	6N1	40	12.2	27	8.2	20
54	16.5	62	18.9	11	68	20.7	6N1	7N1	40	12.2	27	8.2	16
60	18.4	68	20.7	12	74	22.6	6N1	7N1	46	14.0	27	8.2	16

* R Distance does not include the length of push bar and vehicle.

The AR Gap Ranges have been computed for each bridge length, taking into account the minimum and maximum bearing for all MGBs.

Table 2-3. Bridge Length vs AR Gap Ranges (Cont).

AR Gap Ranges				Double Story Number of Bays	Bridge Length		Nose Construction Site Condition		R Distance * Site Condition				Military Load Class (MLC)
Minimum		Maximum							Normal		Restricted		
ft	m	ft	m		ft	m	Normal	Restricted	ft	m	ft	m	
22	6.7	29.5	8.9	1	37	11.3	2N1	3N1	33	10.0	30	9.2	60
28	8.5	35.5	10.8	2	43	13.1	3N1	4N1	39	11.8	30	9.2	60
34	10.3	41.5	12.6	3	49	14.9	3N1	4N1	40	12.2	30	9.2	60
40	12.2	47.5	14.5	4	55	16.8	3N1	4N1	43	13.1	30	9.2	60
46	14.0	53.5	16.3	5	61	18.6	4N1	5N1	49	14.9	30	9.2	60
52	15.8	59.5	18.1	6	67	20.4	4N1	6N1	49	14.9	30	9.2	60
58	17.6	65.5	20.0	7	73	22.3	4N1	6N1	52	15.8	36	11.0	60
64	19.5	71.5	21.8	8	79	24.0	5N1	7N1	55	16.8	36	11.0	60
70	21.3	77.5	23.6	9	85	26.9	5N1	7N1	58	17.7	42	12.8	60
76	23.1	83.5	25.5	10	91	27.7	5N1	7N1	64	19.5	42	12.8	60
82	25.0	89.5	27.3	11	97	29.6	6N1	8N1	67	20.4	42	12.8	60
88	26.8	95.5	29.1	12	103	31.4	6N1	8N1	71	21.6	48	14.6	60

* R Distance does not include the length of push bar and vehicle.

The AR Gap Ranges have been computed for each bridge length, taking into account the minimum and maximum bearing for all MGBs.

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EXAMPLE: Given a mission to provide an MGB with an MLC of 60 and the Reconnaissance report gives an AR Gap of 78 ft (23.8 m). Read down the AR Gap columns until a range of gaps are found that will bracket the AR Gap given.

** In this case, 76 ft (23.1 m) to 83.5 (25.5 m) will bracket 78 ft (23.8 m).

Reading across this line it is found that a 2E + 11 bay - 91 ft (27.7 m) long bridge will be needed to span given AR Gap, and provide the MLC required by the mission.

2-5. BRIDGE CONSTRUCTION TIMES.

a. Building times for various bridge lengths is given in Table 1-4, paragraph 1-6.e. These times are figured from the arrival on site to the opening of the bridge for traffic.

b. The time for construction can be decreased through drill training and thorough planning of the mission.

c. Poor site conditions and inclement weather will increase the amount of building time by 50 percent.

2-6. WORK PARTY REQUIRED.

The work parties required for all MGB's is given in Table 1-3, paragraph 1-6.d. Increasing or decreasing the size of the work party will considerably increase building times.

2-7. DESIGN.

MGB design is a two-phase operation to determine the length of the bridge, type of construction and correct settings of roller beams and the launching nose cross girder.

Phase 1. In this phase, the preliminary studies, site selection and reconnaissance are performed to determine the length of bridge, type of construction, and the location and elevations of the key construction points on the site.

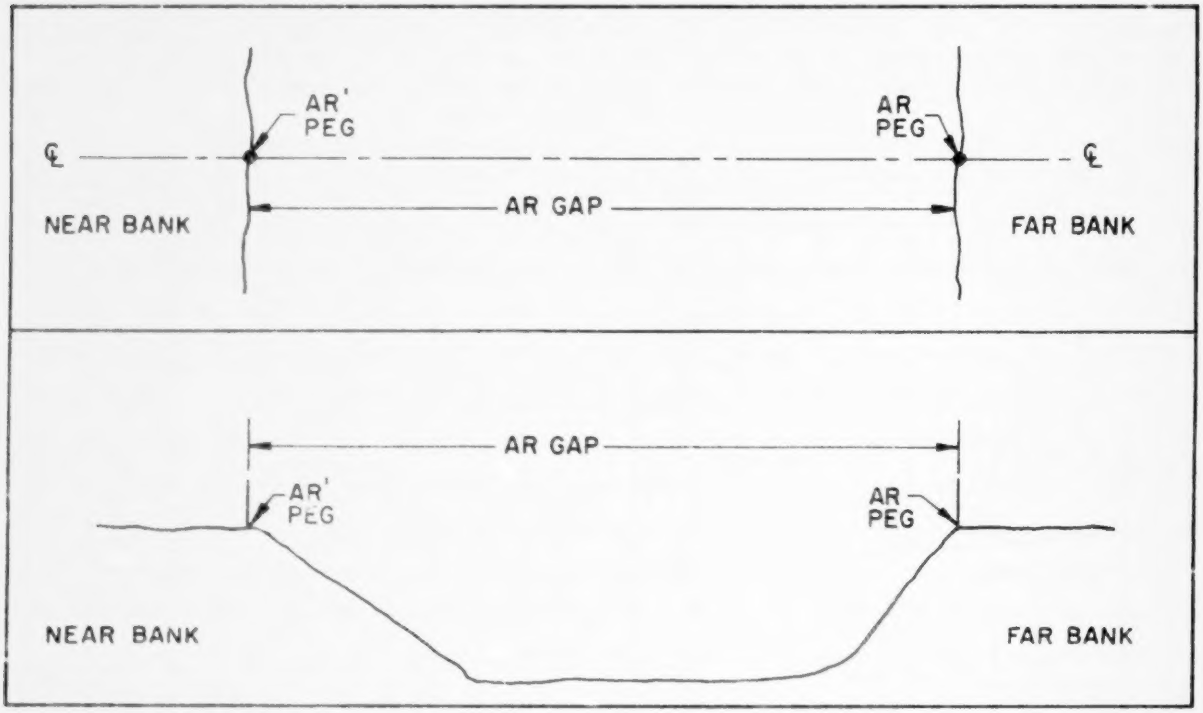
Phase 2. In this phase, the information obtained in phase 1 is used to determine the height setting of the roller beams and the position of the launching nose cross girder.

The procedures that follow are design related parts of the two phases. Single story 4 thru 8 bays will be covered in paragraph a. and 9 thru 12 bays in paragraph b. Double story 2E + 1 thru 2E + 12 bays will be covered in paragraph c.

a. Single Story (SS) (4 thru 8 bay) DESIGN.

The procedures that follow are for design of SS (4 thru 8 bay) MGBs on normal sites only:

(1) Measure AR Gap. See Figure below. Select bridge center line. Place a peg on the centerline on the far bank at the edge of firm ground. Place a peg on the near bank on the centerline at the edge of firm ground. Measure the distance between the pegs. This distance is the AR Gap. Ensure that soil bearing capacity meets requirements as found in paragraph 2-2 c.(2).



(2) Select Bridge. Select a bridge of the required military load class (MLC) using procedures in paragraph 2-4 a and b. Note that for each bridge length there is a range of AR gaps: e.g., 44 ft (13.4 m) bridge - AR gap range is 30 - 38 ft (9.2 - 11.6 m). This range has been computed for each bridge length taking into account the minimum and maximum bearing for all bridges.

EXAMPLE:

(a) Given an AR gap of 34 ft (10.3 m), mission requires MLC 30. Select bridge:

See paragraph 2-4 a.

Select SS 7 bay - 44 ft (13.4 m) bridge.

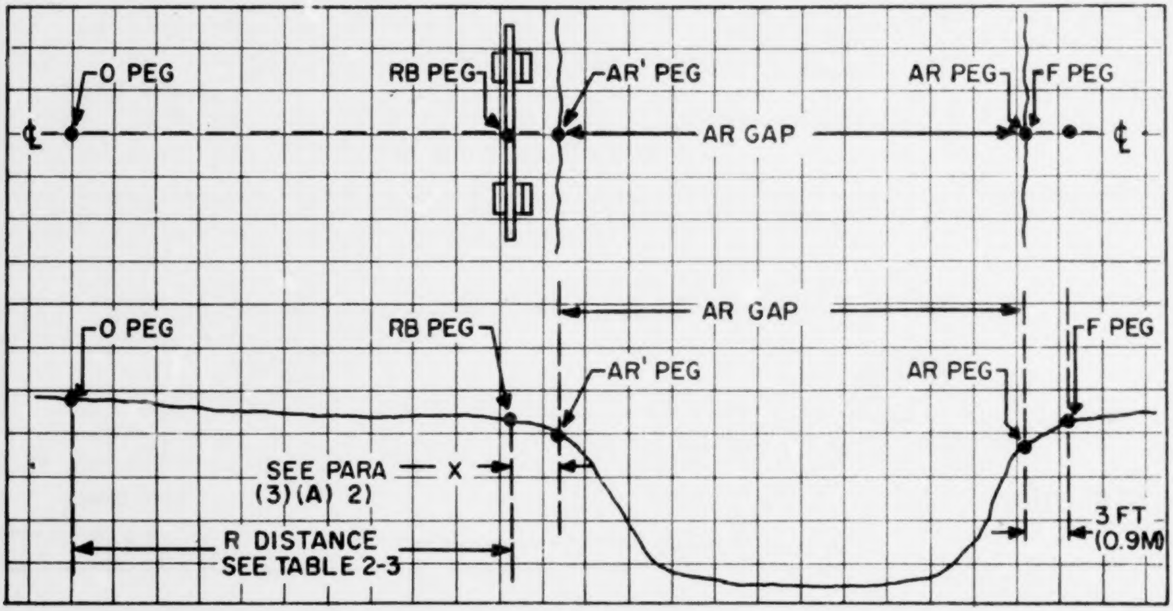
(b) Given an AR gap of 19 ft (5.8 m), mission requires MLC 60. Select bridge:

See paragraph 2-4 a.

Select either SS 4 bay - 26 ft (7.9 m) or SS 5 bay - 32 ft (9.8 m) bridge.

Answer: Select easiest bridge to build - shortest bridge. Select SS 4 bay - 26 ft (7.9 m).

(3) Locate and Take Elevations at Key Construction Points. These points are shown and explained below. When taking elevations, the roller beam (RB) peg is to be used as Datum (0.0 elevation) and the elevation of the other pegs are to be given in relation to the RB peg.



(a) Locate Key Construction Points.

1) F peg. Final position of far bank end of bridge. For design purposes, the F peg is always 3 ft (0.9 m) from the AR peg.

2) RB. May be located in one of two different positions dependent upon launch method: push launch or jack launch. For design purposes, an approximate position midway between push launch and jack launch is selected. During site layout, the RB is accurately positioned.

Location of RB:

Distance from AR peg on near bank to RB is (X).

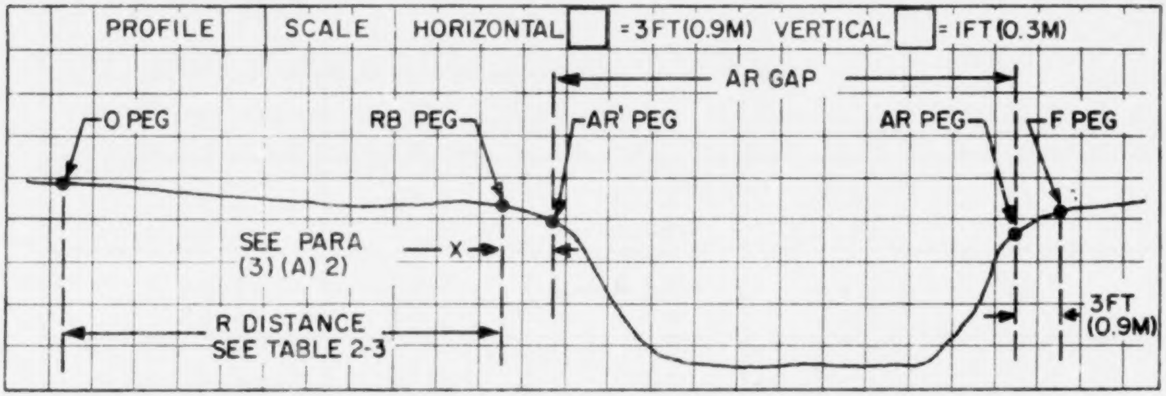
X= chosen bridge length - [AR gap + 3 ft (0.9 m)]

3) 0. Locate 0 distance R (from Table 2-3) from RB along centerline.

(b) Measure elevations of F, RB, and 0. This enables a base line to be plotted on graph paper, from which nose lift can be computed. Lift is achieved by placing the RB on packing.

1) Check that difference in elevation between F and RB does not exceed 1/10 of chosen bridge length or that differences in the elevation of each girder (side of bridge) does not exceed 1/10 the width of bridge. If greater than 1/10 of chosen bridge length prepare to pack up lower end of bridge when launched or select new centerline.

2) Reduce elevations of F and 0 using elevation of RB as a reference point and plot cross section of gap on graph paper (exaggerate vertical scale). See Figure below.

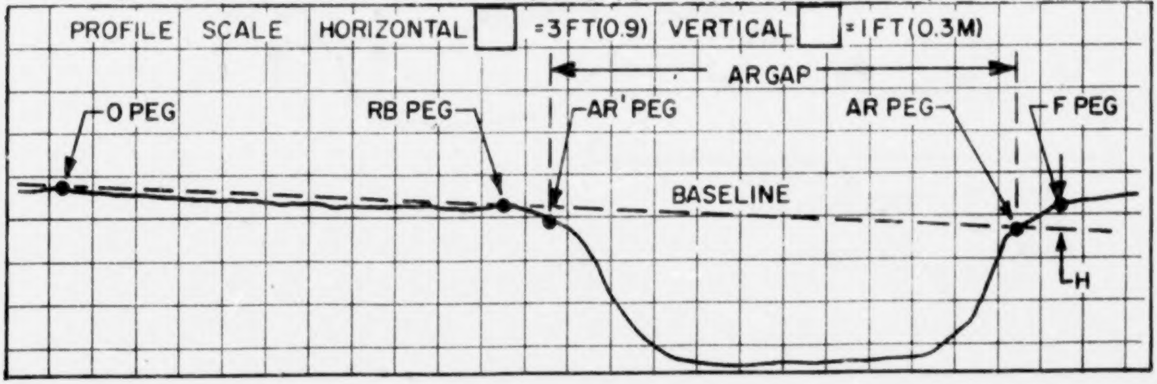


3) Join 0 and RB (establishing base line). Line drawn should extend beyond F and 0 pegs.

4) Measure H (far bank height at F relative to base line). See Figure below.

NOTE

Up to 1/10 transverse slope (opposite directions) is allowable.



(4) Launch design.

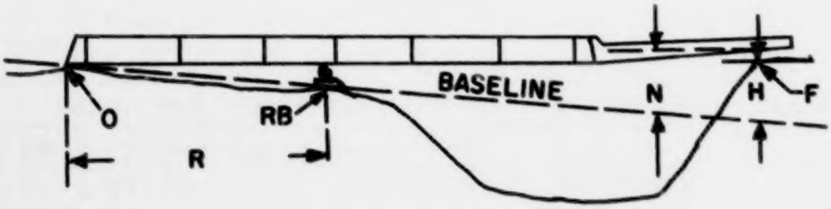
(a) RB packing. From Table 2-4 check if N (nose lift above base line) for chosen bridge is greater than H (from drawing). If not, pack up under RB (Table 2-4, Note 3).

(b) Push/jack launch. Preferred, simplest launch method is push launch.

1) Push launch bridge IF no packing under RB. Ground onto which bridge to be launched on home bank is soft (or sandbags used to cushion launch).

Table 2-4. SS Bridge Nose Lift.

Bridge Span Bays	RB Height		N	
	in	cm	ft	m
4	17.0 23.5	43.1 60.0	4.24 5.75	1.30 1.75
5	17.0 23.5	43.1 60.0	3.75 5.50	1.14 1.68
6	17.0 23.5	43.1 60.0	3.50 5.25	1.07 1.60
7	17.0 23.5	43.1 60.0	2.50 3.00	0.76 0.91
8	17.0 23.5	43.1 60.0	1.25 2.75	0.38 0.84



NOTES:

1. Height of RB assembly: On baseplate only - 17 in (43.1 cm)
   On baseplate and one deck unit - 23.5 in. (60.0 cm)
2. The Table incorporates an allowance to ensure that the nose clears the landing roller (LR) when it is positioned 9 in (23.0 cm) behind point F (final position of far end of bridge).
3. Any additional packing under RB will increase the vertical interval H by three times the thickness of the packing: e.g., if packing is 3 in. (7.5 cm) thick, H will be increased by 8.89 in (22.5 cm).
4. An extra 3 in (7.5 cm) of clearance can be obtained by lifting on the nose to take out nose pin sag.

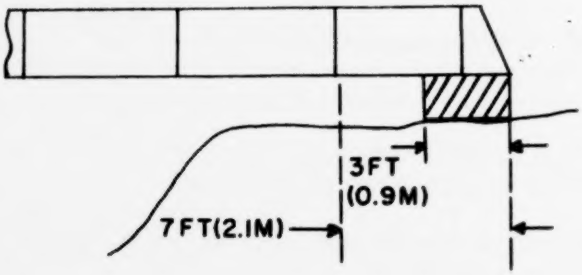
2) Jack launch bridge IF any of the conditions found in (4) (b) 1) are not met.

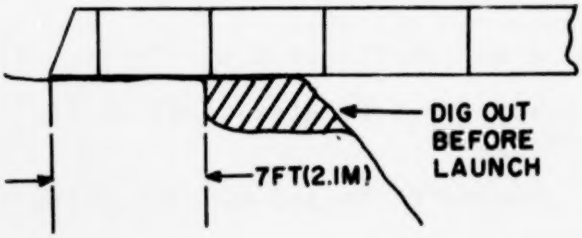
(5) Bearing Check. See Figures.

Check to ensure that minimum bearing on far bank is 3 ft (0.9 m) and that maximum bearing of 7 ft (2.1 m) on near bank is not exceeded. If bearing does exceed 7 ft (2.1 m), packup or dig out.

NOTE

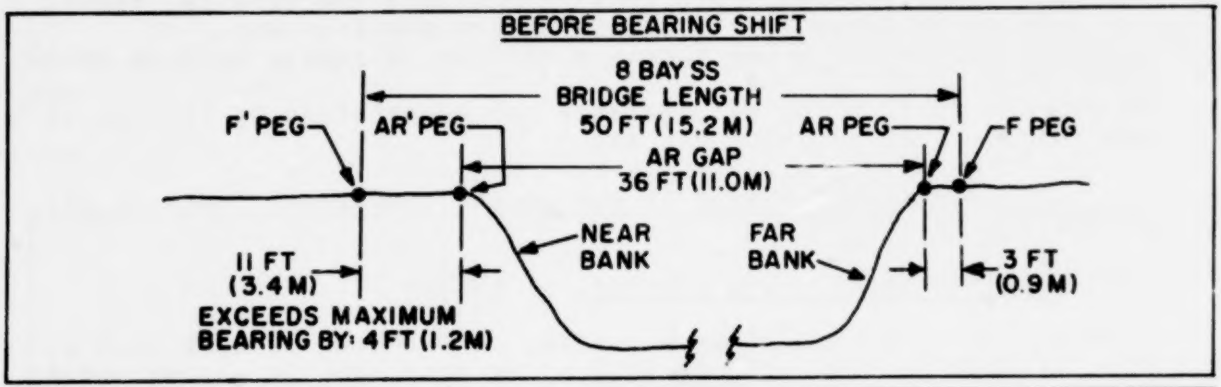
Bridge cannot be push launched onto packing (unless sandbags are used to cushion the fall).

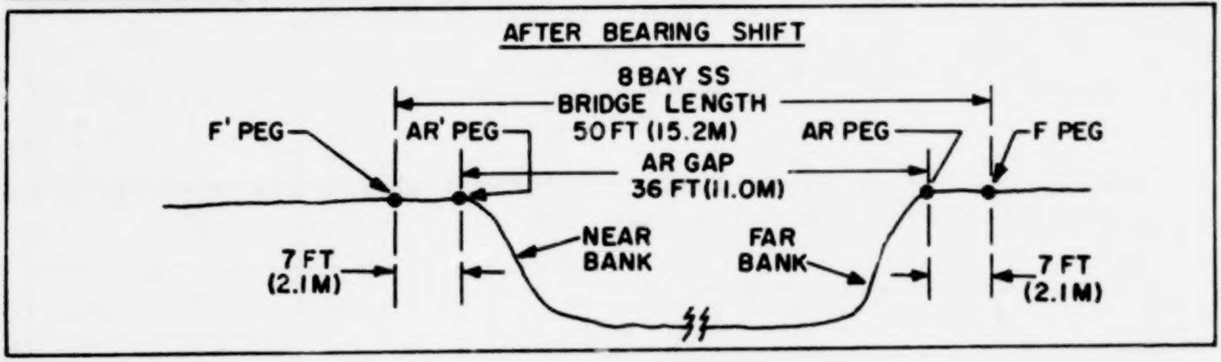




NOTE

In cases where too much of the near end of bridge is bearing on the ground and packing is not available, or the ground is too hard to dig out, the F peg may be moved farther from the AR peg to allow more of the far end of bridge to bear on the ground.





Example

SS DESIGN

1. Measure AR gap.

   39 ft (11.9 m) (soft ground, both banks).

2. Select bridge.

   (required MLC 30).
   SS 8 bay 50 ft (15.2 m) (Table 2-3).

3. Locate and take elevations at key construction points (F, RB and O).

   a. Locate F, RB and O. See paragraph 2-7.a.(3).

      (1) F. 3 ft (0.9 m) from AR peg on far bank.

(2) RB. Distance from AR peg on near bank to RB (X).

= Bridge length - [AR gap +3 ft (0.9 m)]

= 50 ft (15.2 m) - 39 ft (11.9 m)
+ 3 ft (0.9 m) = 8.0 ft (2.45 m)
(para (3)(a)2.)

(3) O. 37 ft (11.3 m) from RB (Table 2-3).

b. Take elevations of F, RB and O.

ELEVATIONS (Assume no instruments are available. Therefore, elevations are estimated.)

F	1.0 ft (0.3 m) above RB
RB	Reference point - 0.0 elevation
O	2.0 ft (0.6 m) above RB

(1) SLOPE CHECK

F is 1.0 ft (0.3 m) above RB. Maximum height difference for 8 bay bridge is 1.25 ft (0.38 m). See Table 2-4. 1.0 ft (0.3 m) is less than 1.25 ft (0.38 m). Therefore, slope is OK.

(2) Plot Cross Section on Graph Paper
(See paragraph 2-7. a (3) (b).

(a) Mark RB location near center of graph paper.

(b) Determine suitable scale (exaggerate vertical scale).

(c) Mark location of F and O.

(d) Join all marks with line giving rough profile of site.

(e) Using straight edge, join RB and O with line which extends beyond O and F pegs. This is baseline of bridge.

(3) The following can now be determined from graph:

H - the vertical distance from baseline to F.

4. Launch design.

a. RB packing.

N for 8 bay SS Brg 1.25 ft (0.38 m)
(Table 2-4).

H = 3.0 ft (0.9 m)
Therefore packing required

(1) Place RB on deck unit (Table 2-4)

New N = 2.75 ft (0.84 m)
[H = 3.0 ft (0.9 m)]

(2) 0.25 ft (0.08 m) lift still needed.

Place deck unit on packing (packing height L results in lift of 3 x L).

Therefore need $\frac{0.25 \text{ ft } (0.08 \text{ m})}{3}$

Packing = 0.08 ft (0.02 m)
(para (4) (6) (1).

b. Push/jack launch.

Packing used above therefore MUST jack launch [para (4) (b)].

5. Check bearing.

a. Far bank. 3 ft (0.9 m) OK
(para (5))

b. Near bank.

Bearing = Brg length -[AR gap + 3 ft (0.9)]

= 50 ft (15.2 m)- [39 ft (11.9 m) + 3 ft (0.9 m)]

= 8.0 ft (2.4 m)

Maximum bearing 7.0 ft (2.1 m) has been exceeded [See para (5)].

FINAL DESIGN

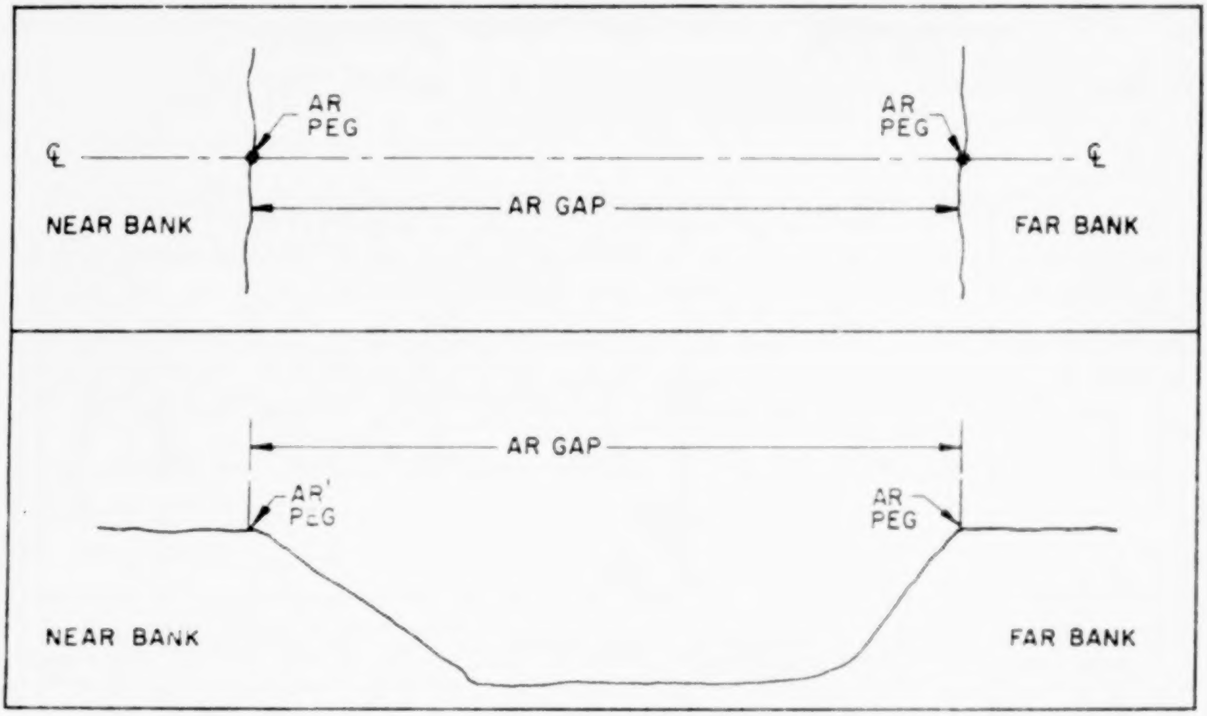
8 bay SS 50 ft (15.2 m) CL 30 Brg

Place RB on 1.25 in (3.18 cm) deck section.

Jack launch.

b. Single Story (SS) (9 thru 12 bay) DESIGN (Normal Site).

(1) Measure AR Gap. See Figure below. Select bridge center line. Place a peg on the centerline on the far bank at the edge of firm ground. Place a peg on the near bank on the centerline at the edge of firm ground. Measure the distance between the pegs. This distance is the AR Gap. Ensure that soil bearing capacity meets requirements as found in paragraph 2-2. c. (2).



(2) Select Bridge. Select a bridge of the required military load class (MLC) using procedures in paragraph 2-4a. and b. Note that for each bridge length there is a range of AR gaps: e.g., 68 ft (20.7 m) bridge - AR gap range is 54 - 62 ft (16.5 - 18.9 m). This range has been computed for each bridge length taking into account the minimum and maximum bearing for all bridges.

EXAMPLE:

(a) Given an AR gap of 45 ft (13.7 m), mission requires MLC 24. Select bridge:

See paragraph 2-4 a.

Select SS 9 bay - 56 ft (17.1 m) bridge.

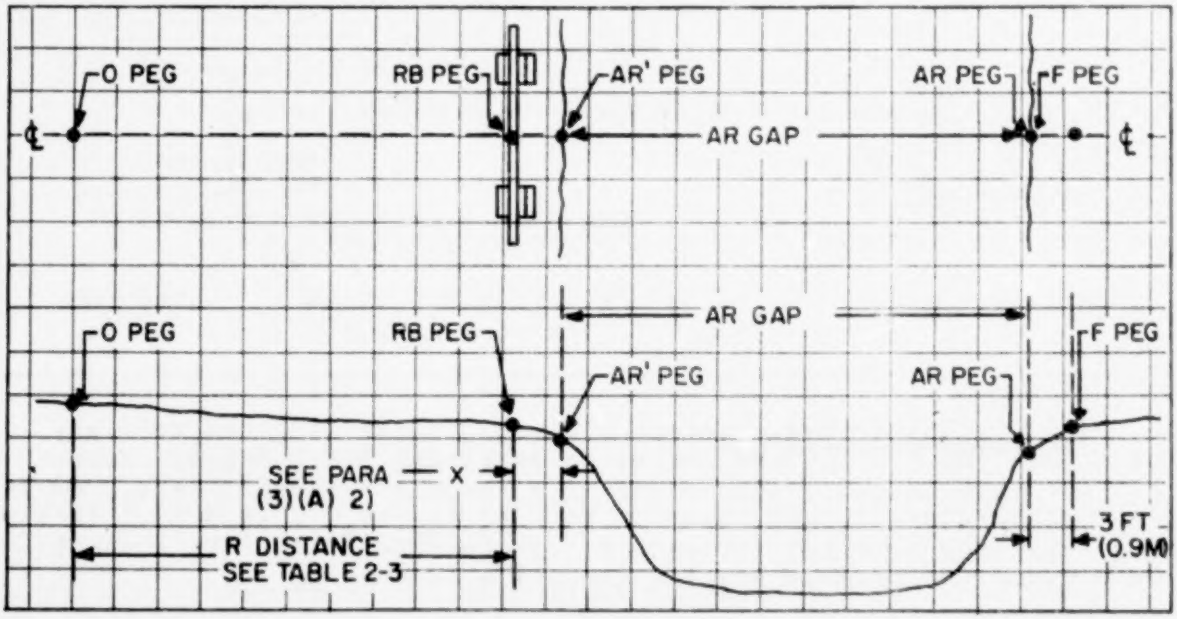
(b) Given an AR gap of 55 ft (16.8 m), mission requires MLC 12. Select bridge:

See paragraph 2-4 a.

Select either SS 10 bay - 62 ft (18.9 m) or SS 11 bay - 68 ft (20.7 m) bridge.

Answer: Select easiest bridge to build - shortest launching nose/shortest bridge. Select SS 10 bay - 62 ft (18.9 m).

(3) Locate and Take Elevations at Key Construction Points. These points are shown and explained below. When taking elevations, the roller beams (RB) peg is to be used as Datum (0.0 elevation) and the elevation of the other pegs are to be given in relation to the RB peg.



(a) Locate Key Construction Points.

1) F peg. Final position of far bank end of bridge. For design purpose, the F peg is always 3 ft (0.9 m) from the AR peg.

NOTE

Up to 1/10 transverse slope (opposite directions) is allowable.

2) RB. Position of the RB is determined as shown below.

Location of RB:

Distance from AR peg on near bank to RB is (X).

X = chosen bridge length - (AR gap + 3 ft (0.9 m))

3) 0 Peg. Point indicating the end of R distance. See Table 2-3 for R distance needed for bridge being constructed.

(b) Measure elevations of F, RB and 0. This enables a base line to be plotted on graph paper, from which nose and tail lift can be computed. Lift is achieved by:

Altering the launch nose cross girder (LNCG) setting.

Raising the RB on packing.

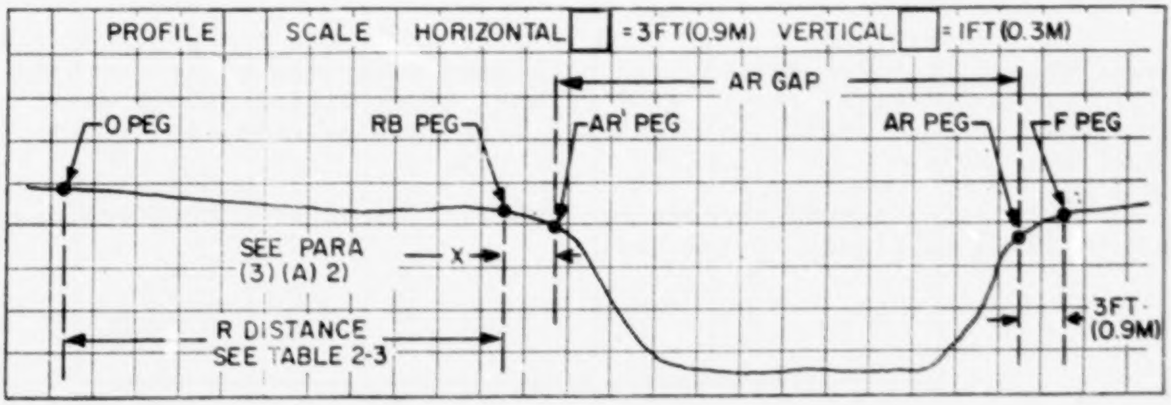
1) Check that the difference in elevation between F and RB does not exceed 1/10 overall chosen bridge length, or that difference in the elevation of each girder (side of bridge) does not exceed 1/10 the width of bridge. If greater than 1/10 bridge length:

Prepare to pack up lower end bridge when launched

OR

Select new centerline.

2) Reduce elevations of F and 0 using elevation of RB as reference point and plot cross section of gap on graph paper. See below. (Exaggerate vertical scale).

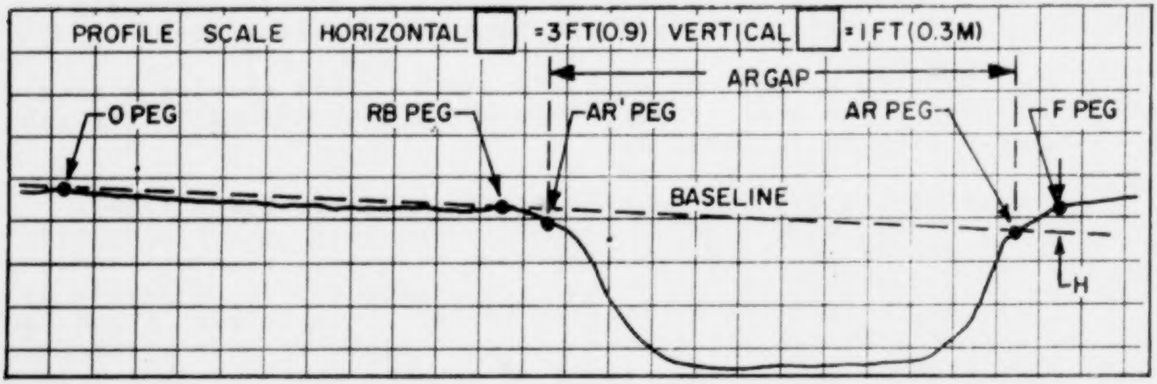


3) Join 0 and RB (establishing base line). Line drawn should extend beyond F and 0 pegs.

4) Measure H (far bank height at F relative to base line. See figure below.

NOTE

Up to 1/10 transverse slope (opposite directions) is allowable.



(4) Launch design.

(a) Nose lift. From the Tables below, compute setting of launch nose cross girder (LNCG), on baseplate only.

NOTE

On LNCG, setting 2 results in easiest construction.

(b) RB packing. If an LNCG setting of 1 does not provide enough nose lift, then packing can be placed under the RB to increase lift. Table 2-5 gives amount of lift when RB is placed on one deck unit, and how much additional lift can be gained by using packing on top of deck unit.

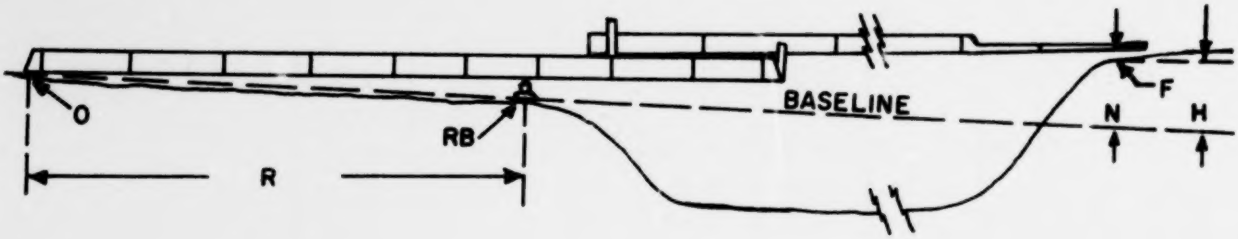
(c) Jack launch. Bridge must be jack launched; therefore move RB 9 in (0.23 m) closer to the gap.

Table 2-5.

Bridge Span Bays	Nose Cross Girder Setting	RB Height (Note 1)		
		in.	cm	ft
9	High 4	17.0 23.5	43.1 60.0	-2.50 -0.25
	Middle 2	17.0 23.5	43.1 60.0	2.00 3.75
	Low 1	17.0 23.5	43.1 60.0	6.00 7.75
10	High 4	17.0 23.5	43.1 60.0	-3.25 -2.00
	Middle 2	17.0 23.5	43.1 60.0	1.25 2.50
	Low 1	17.0 23.5	43.1 60.0	5.25 6.50

SS Bridge Nose Lift.

	Bridge Span Bays	Nose Cross Girder Setting	RB Height (Note 1)		N	
m			in.	cm	ft	m
-0.76	11	High	17.0	43.1	-4.50	-1.37
-0.03		4	23.5	60.0	-3.50	-1.07
0.61		Middle	17.0	43.1	0.50	0.15
1.14		2	23.5	60.0	1.50	0.48
1.83		Low	17.0	43.1	6.00	1.83
2.36		1	23.5	60.0	8.00	2.44
-0.99	12	High	17.0	43.1	-7.00	-2.13
-0.61		4	23.5	60.0	-5.25	-1.60
0.38		Middle	17.0	43.1	-1.50	-0.46
0.76		2	23.5	60.0	0.25	0.08
1.60		Low	17.0	43.1	3.50	1.07
1.98		1	23.5	60.0	5.75	1.60



NOTES:

1. Height of RB assembly: on baseplate only - 17 in (43.1 cm)
on baseplate and one deck unit - 23.5 in. (60.0 cm).

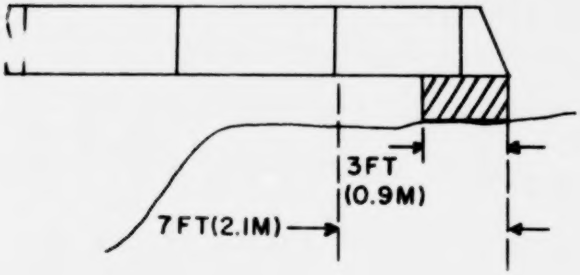
2. The Table incorporates an allowance to ensure that the nose clears the landing roller (LR) when it is positioned 9 in.(23.0 cm) behind point F (final position of far end of bridge).

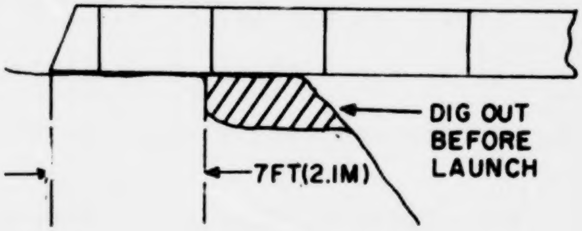
3. Any additional packing under RB will increase the vertical interval H by three times the thickness of the packing, e.g., if packing is 3 in (7.5 cm) thick, H will be increased by 8.89 in (22.5 cm).

4. An extra 3 in (7.5 cm) of clearance can be obtained by lifting on the nose to take out nose pin sag.

(5) Bearing Check.

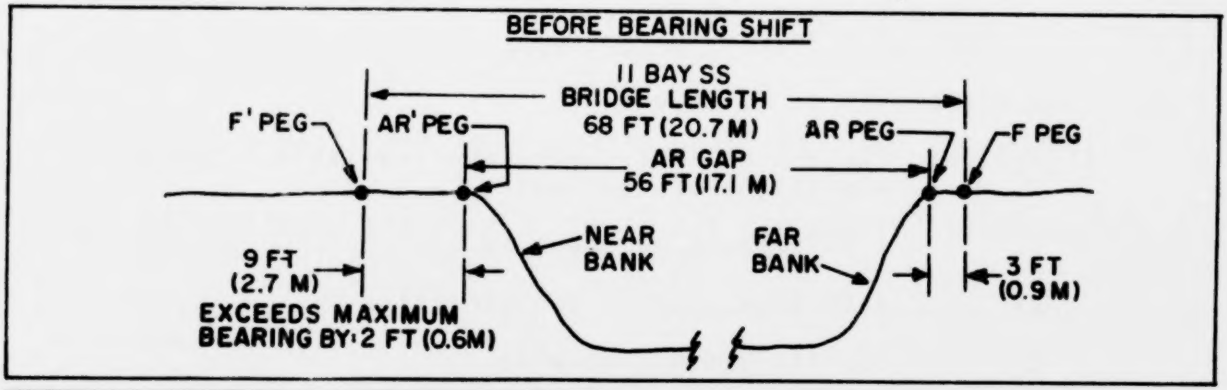
Check to ensure that minimum bearing on far bank is 3 ft (0.9 m) and that maximum bearing of 7 ft (2.1 m) on near bank is not exceeded. If bearing does exceed 7 ft (2.1 m), packup or dig out.

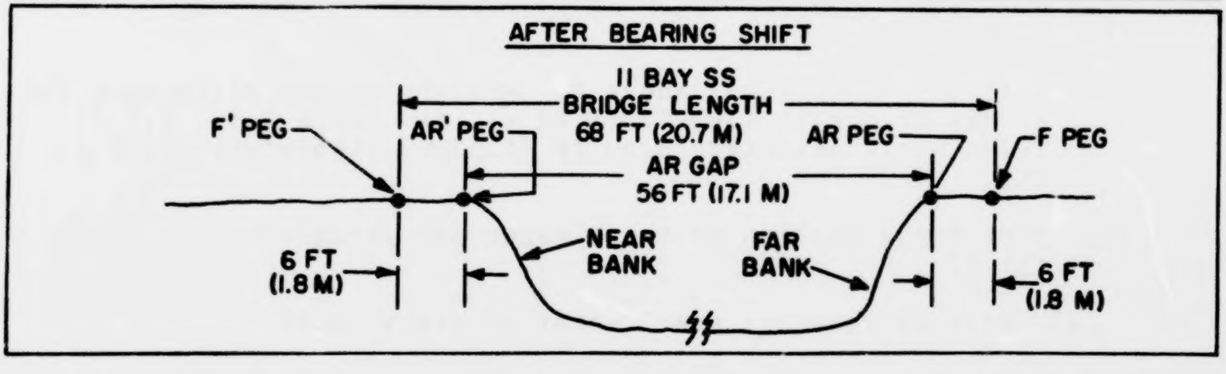




NOTE

In cases where too much of the near end of bridge is bearing on the ground and packing is not available, or the ground is too hard to dig out, the F peg may be moved farther from the AR peg to allow more of the far end of bridge to bear on the ground.





Example

SS DESIGN

1. Measure AR gap.

   57 ft (17.4 m) (soft ground, both banks).

2. Select bridge.

   (required MLC 16).

   SS 11 bay - 68 ft (20.7 m) (Table 2-3).

3. Locate and take elevations at key construction points (F, RB and O).

   a. Locate F, RB and O. See paragraph 2-7. b. (3).

      (1) F. 3 ft (0.9 m) from AR peg on far bank.

      (2) RB. Distance from AR peg on near bank to RB (X).

      = Brg length - [AR gap + 3 ft (0.9 m)]

      = 68 ft (20.7 m) - 57 ft
      (17.4 m) + 3 ft (0.9 m)
      = 8.0 ft (2.45 m) [para
      (3) (a) 2.]

   b. Take elevations of F, RB and O.

ELEVATIONS	(Assume no instruments are available. Therefore elevations are estimated).
F	2.5 ft (0.76 m) above RB
RB	Reference point - 0.0 elevation
O	2.0 ft (0.6 m) above RB

      (1) SLOPE CHECK

      F is 2.5 ft (0.76 m) above F. Maximum height difference for 11 bay bridge is 6.00 ft (1.83 m). See Table 2-1. 2.5 ft (0.76 m) is less than 6.00 ft (1.83 m), therefore slope is OK.

      (2) Plot Cross Section on Graph Paper See paragraph 2-7. b.(3) (b) 2.

         (a) Mark RB location near center of graph paper.

         (b) Determine suitable scale (exaggerate vertical scale).

(c) Mark location of F and O.

(d) Join all marks with line giving rough profile of site.

(e) Using straight edge, join RB and O with line which extends beyond O and F pegs. This is baseline of bridge.

(3) The following can now be determined from graph.

H - The vertical distance from baseline to F.

H - DETERMINED TO BE:

H = 6.75 ft (2.06 m)

4. Launch design.

a. LNCG setting to provide nose lift. See paragraph 2-7. a.(4).

Requires: N to be greater than H (from graph H = 6.75 ft (2.08 m)).

From Table 2-5 select nose cross girder setting that will give values of N greater than H, or select setting that is closest to H.

Setting 1 provides:

N = 6.00 ft   Not greater than 6.75 ft
(1.83 m   Not greater than 2.06 m)

Packing will have to be placed under RB. See b. RB Packing below.

b. RB Packing. See Note 1, Table 2-5 and check Table for lift provided by placement of RB on deck unit.

N from Table 2-5 = 8.00 ft (2.44) which is greater than H from graph = 6.75 ft (2.06 m).

c. Jack Launch. Bridge must be jack launched; move RB 9 in (0.23 m) closer to the gap.

5. Bearing Check.

a. Far bank. 3 ft (0.9 m) OK (para (5))

b. Near bank.

bearing = Brg length - (AR gap + 3 ft(0.9 m)

= 68 ft (20.7 m) - [57 ft (17.4 m) + 3 ft (0.9)]

= 8.0 ft (2.4 m)

Maximum bearing 7.0 (2.1 m) has been exceeded [See para (5)]

FINAL DESIGN

11 bay SS 68 ft (20.7 m) CL 16 Bridge

LNCG Setting - 1

Place RB on deck unit packing

Jack Launch

c. Single Story (SS) (9 thru 12 bay) DESIGN (Restricted Site).

1 The design procedure for SS bridges (9 thru 12 bay) on restricted sites is the same as for normal sites except that:

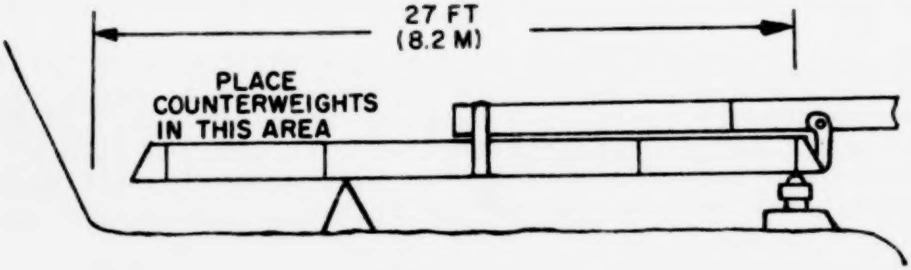
(a) The maximum R distance during construction is 27 ft (8.2 m). See Table 2-3.

(b) The launching nose length is increased by one launching nose heavy unit. See Table 2-3.

(c) Counterweights are required as described below:

Table 2-6. Counterweights.

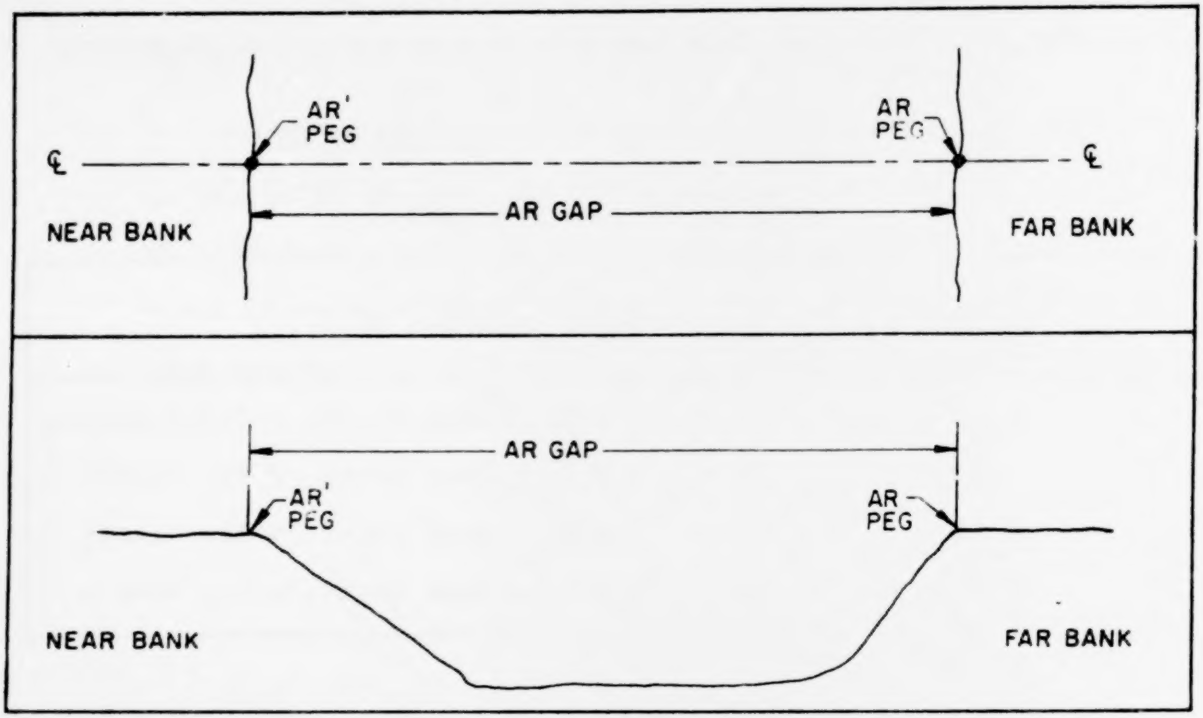
Bridge Length No of Bays	Counterweights Required
9	1 BSB, 3 Deck Units, 2 Top Panels
10	1 BSB, 3 Deck Units, 2 Top Panels
11	1 BSB, 3 Deck Units, 4 Top Panels
12	1 BSB, 3 Deck Units, 4 Top Panels



Add Bay 4 and rear bankseat beam, with shoot bolts only.
Add LNH 1, 2 and 3, booming forward as each is added.
Add counterweight as far to the rear as possible and leaving a central gap so that there is room to bring up and fit subsequent LNH.

d. Double Story (DS) (2E+1 thru 2E+12 bay) DESIGN (Normal Site).

(1) Measure AR Gap. See Figure below. Select bridge center line. Place a peg on the centerline on the far bank at the edge of firm ground. Place a peg on the near bank on the centerline at the edge of firm ground. Measure the distance between the pegs. This distance is the AR Gap. Ensure that soil bearing capacity meets requirements as found in paragraph 2-2. c. (2).



(2) Select Bridge. Select a bridge of the required military load class (MLC) using procedures in paragraph 2-4 a and b. Note that for each bridge length there is a range of AR gaps: e.g., 79 ft (24.0 m) bridge - AR gap range is 64 - 71.5 ft (19.5 - 21.8 m). This range has been computed for each bridge length taking into account the maximum and minimum bearing for all bridges.

EXAMPLE:

(a) Given an AR gap of 61 ft (18.5 m), requires MLC 60. Select bridge:

See paragraph 2-4 a.

Select DS 7 bay - 73 ft (22.3 m) bridge.

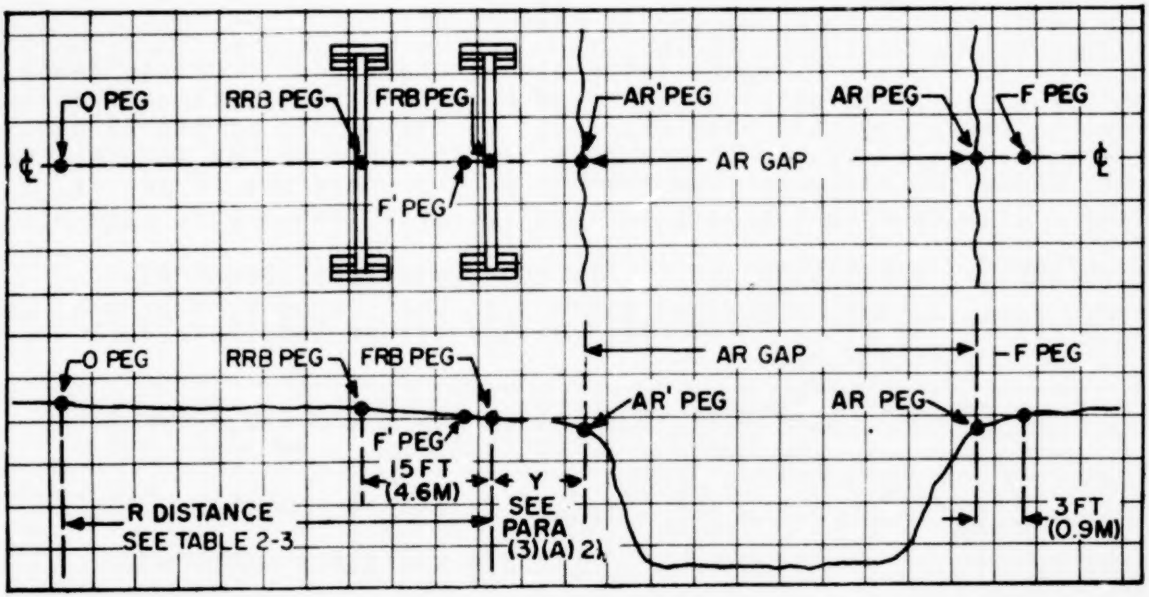
(b) Given an AR gap of 88 ft (26.8 m), requires MLC 60. Select bridge:

See paragraph 2-4 a.

Select either DS 11 bay - 97 ft (29.6 m) or DS 12 bay - 103 ft (31.4 m) bridge.

Answer: Select easiest bridge to build - shortest bridge. Select DS 11 bay - 97 ft (29.6 m).

(3) Locate and Take Elevations at Key Construction Points. These points are shown and explained below. When taking elevations, the FRB peg is to be used as Datum (0.0 elevation) and the elevation of the other pegs are to be given in relation to the FRB peg.



(a) Locate Key Construction Points.

1) F peg. Final position of far bank end of bridge. For design purpose, the F peg is always 3 ft (0.9 m) from the AR peg.

2) FRB peg. Location of front roller beam. Distance from AR' peg to center of FRB is determined as shown below.

FRB. Distance from AR' peg on near bank to FRB (y).

Y = Brg length - (AR gap + 4.5 ft (1.4 m).

= 73 ft (22.3 m) - 61 ft (18.5 m) + 4.5 ft (1.4 m) = 7.5 ft (2.3 m).

3) RRB peg. Location of rear roller beam. Distance from center of FRB to center of RRB is always 15 ft (4.6 m).

4) 0 peg. Point indicating the end of R distance. See Table 2-3 for R distance needed for bridge being constructed.

(b) Locate other points on site.

1) F' peg. Final position of near bank end of bridge (near bank bearing). This distance is found by adding the distance from the AR peg to the F peg (far bank bearing), to the length of the AR gap. The total of these two is then subtracted from the bridge length; the result being the distance from the AR' peg to where the F' peg is placed. This bearing distance must not be less than 4.5 ft (1.4 m).

EXAMPLE: Finding AR' to F' distance (near bank bearing).

GIVEN: AR gap - 61 ft (18.5 m) and bridge length - 73 ft (22.3 m).

Near bank bearing = Brg length - (AR gap + far bank bearing)

= 73 ft - (61 ft + 3 ft)

[22.3 m - (18.5 m + 0.9 m)]

= 9 ft (2.7 m)

Since maximum bearing is 7.5 ft (2.3 m), bridge will need packing under ETP's:

OR

Digging out of bank from under ETP is necessary.

OR

Total bearing of both banks can be divided by 2 and equal amounts of bearing used under both ends of bridge.

If last option is selected, F peg will have to be moved farther from AR peg on far bank. Placement of the FRB peg will be moved toward the gap, ensuring that it is 1.5 ft (0.5 m) closer to the gap than the F' peg.

2) Check elevation of banks. Measure elevations of AR and AR' in relation to water level, or gap depth, and the elevation of FRB.

(c) Measure elevations of F, F', FRB, RRB and 0. This enables a base line to be plotted on graph paper, from which nose and tail lift can be computed. Lift is achieved by:

Altering the launch nose cross girders (LNCG setting).

Raising and lowering the FRB and RRB.

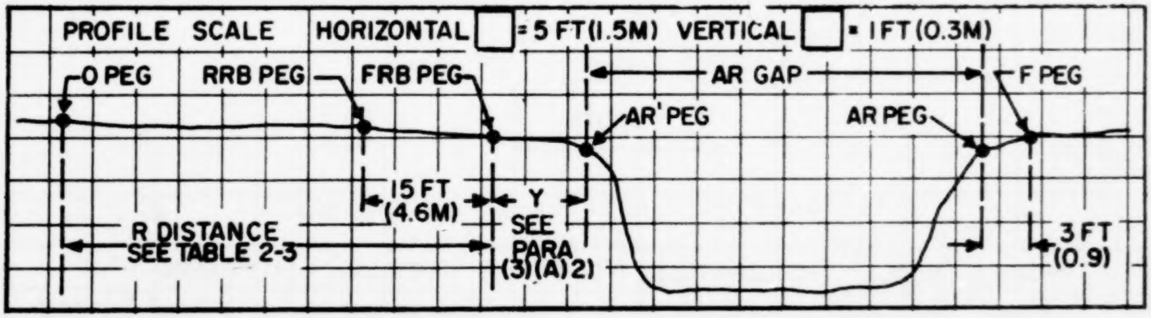
1) Check that difference in elevation between F and F' (on near bank) does not exceed 1/10 overall chosen bridge length, or that difference in the elevation of each girder (side of bridge) does not exceed 1/10 the width of bridge. If greater than 1/10 bridge length.

Prepare to pack up lower end of bridge when launced:

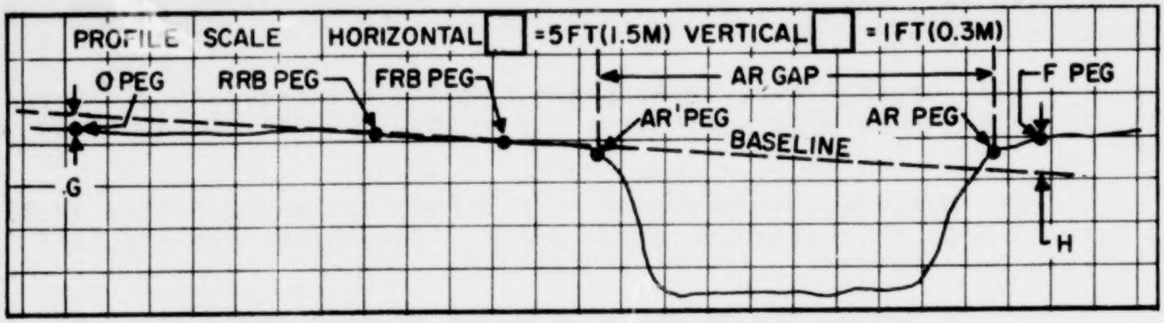
OR

Select new centerline.

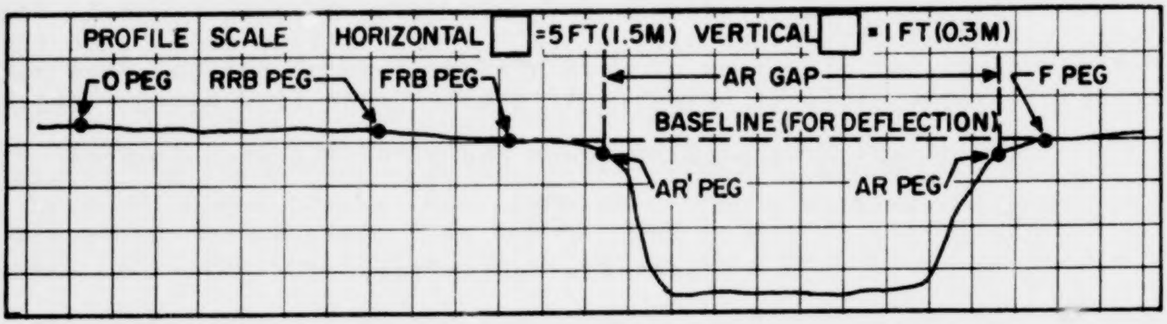
2) Reduce elevations of F, RRB, and 0 using elevation of FRB as reference point, and plot cross section of gap on graph paper. See below. (Exaggerate vertical scale).



3) Join FRB and RRB (establishing base line). Line drawn should extend beyond F and O pegs.


PROFILE SCALE HORIZONTAL ☐ =5 FT(1.5M) VERTICAL ☐ = 1 FT(0.3M)
O PEG
RRB PEG
FRB PEG
AR GAP
F PEG
AR' PEG
AR PEG
BASELINE
G
H

4) Join FRB and F (establishing base line used to determine deflection).


PROFILE SCALE HORIZONTAL ☐ =5 FT(1.5M) VERTICAL ☐ = 1 FT(0.3M)
O PEG
RRB PEG
FRB PEG
AR GAP
F PEG
BASELINE (FOR DEFLECTION)
AR' PEG
AR PEG

5) Measure H, (far bank height at F relative to base line), G, (distance between point O and base line), and C, (distance of water below line joining F) and FRB distance W from FRB. For W, see Table 2-7).

NOTE

W is found only when water is present.

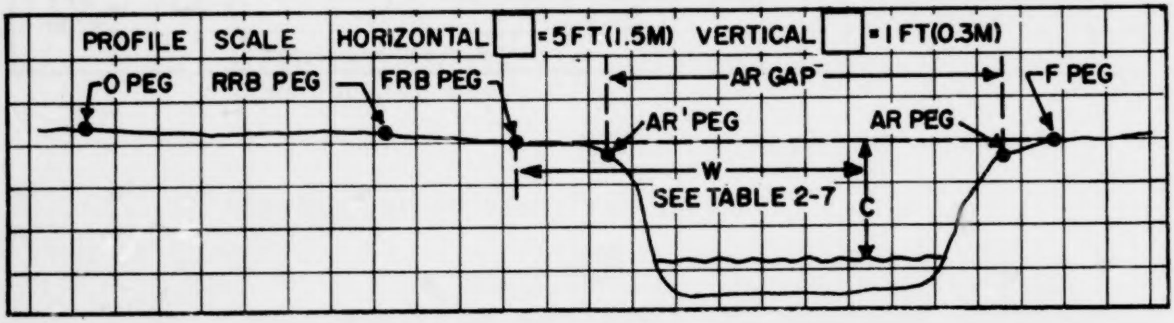

PROFILE SCALE HORIZONTAL ☐ =5 FT(1.5M) VERTICAL ☐ = 1 FT(0.3M)
O PEG
RRB PEG
FRB PEG
AR GAP
F PEG
AR' PEG
AR PEG
W
SEE TABLE 2-7
C

Table 2-7. W Distance Per Bridge.

Bridge Length 2E + No. of Bays	7	8	9	10	11	12
W ft Distance m	43 13.1	49.2 15.0	54.1 16.5	57.7 17.6	60.6 18.5	62.9 19.2

(4) Launch Design.

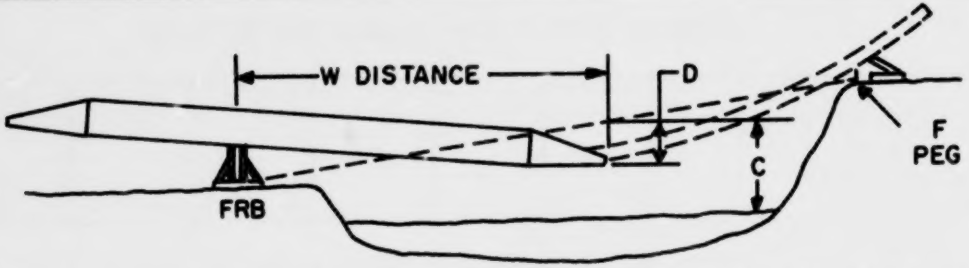
(a) Nose/Tail lift. From the following four rules, and from Tables below, compute setting of launch nose cross girder (LNCG) and final setting of FRB and RRB to achieve necessary nose and tail of bridge lift.

NOTE

On LNCG, setting 4 results in easiest construction. FRB and RRB should remain as low as possible during construction, although they may be raised as necessary (for near bank end of bridge to clear uneven ground). Final design settings for FRB and RRB MUST be set immediately before launch.

Table 2-8. Maximum Deflection

Bridge Length 2E + No. of Bays			D for given nose cross girder setting with FRB in lowest position.						Distance W	
			6		4		2			
	ft	m	ft	m	ft	m	ft	m	ft	m
7	73	22.3	+ 2.30	+ 0.70	+ 1.00	+ 0.31	- 0.30	-0.09	43.0	13.1
8	79	24.0	+ 2.20	+ 0.67	+ 0.82	+ 0.25	- 0.66	-0.20	49.2	15.0
9	85	26.9	+ 2.10	+ 0.64	+ 0.69	+ 0.21	- 0.99	-0.30	54.1	16.5
10	91	27.7	+ 2.00	+ 0.60	+ 0.39	+ 0.12	- 1.31	-0.40	57.7	17.6
11	97	29.6	+ 1.64	+ 0.50	+ 0.13	+ 0.04	- 1.41	-0.43	60.6	18.5
12	103	31.4	+ 1.51	+ 0.46	- 0.20	- 0.06	- 1.90	-0.58	63.0	19.2



DEFINITIONS: C-DISTANCE OF WATER LINE BELOW LINE JOINING BANKS AT A DISTANCE W FROM FRB (NEGATIVE NUMBER).

D-DEFLECTION OF ETP LINE JOINING BANKS AT CRITICAL DISTANCE W.

W-DISTANCE OF ETP FROM FRB FOR MAXIMUM DEFLECTION.

Table 2-9. Nose/Tail Lift (US)

Dimensions above line through ground FRB and RRB (base line) when both are in lowest position. Minus sign (-) in front of value indicates below line.

Bridge Length 2E + No. of Bays			Nose Construction No. of LNH (See Note 1	Nose Tip Height 'N' with Nose Cross Girder at Setting (See Notes 1 and 2)						Tail Height T		Distance R	
				6		4		2					
	ft	m		ft	m	ft	m	ft	m	ft	m	ft	m
1	37	11.3	2N1	1.5	0.46	3.5	1.07	4.2	1.58	1.8	0.55	33	10.0
2	43	13.1	3N1	0.8	0.24	3.4	1.04	6.0	1.83	1.8	0.55	39	11.9
3	49	14.9	3N1	0.8	0.24	3.4	1.04	6.0	1.83	1.8	0.55	40	12.2
4	55	16.8	3N1	0.8	0.24	3.4	1.04	6.0	1.83	1.8	0.55	43	13.1
5	61	18.6	4N1	0.0	0.0	3.3	1.01	6.6	2.01	1.7	0.52	49	14.9
6	67	20.4	4N1	0.0	0.0	3.3	1.01	6.6	2.01	1.7	0.52	49	14.9
7	73	22.3	4N1	0.0	0.0	3.3	1.01	6.6	2.01	1.7	0.52	52	15.8
8	79	24.1	5N1	-0.8	-0.24	3.2	0.98	7.2	2.19	1.5	0.46	55	16.8
9	85	25.9	5N1	-0.8	-0.24	3.2	0.98	7.2	2.19	1.5	0.46	58	17.7
10	91	27.7	5N1	-0.8	-0.24	3.0	0.91	7.2	2.19	1.5	0.46	64	19.5
11	97	29.6	6N1	-1.9	-0.58	2.8	0.85	7.5	2.29	1.3	0.40	67	20.4
12	103	31.4	6N1	-2.8	-0.85	2.7	0.82	7.5	2.29	1.3	0.40	71	21.6

NOTES:

1. Each nose includes a light nose complete..
2. Nose cross girder setting 6, 4 and 2 is position of cross girder resting on 6th, 4th and 2nd hole from bottom of LNCG post.

RULE 1

LNCG settings permitted to avoid immersion in flowing water.

a. Both bank heights greater than 3.1 ft (0.95 m) - no immersion will take place so all settings can be used. Proceed to Rule 2.

b. Still water. Immersion does not matter so all settings can be used. Proceed to Rule 2.

c. Flowing water. Find which settings are permitted.

(1) With FRB in lowest position, values of C and D will both be negative. Settings 2 and 4 are permitted if the height C is numerically greater than the value of D in Table 2-8 (ignoring signs). If 2 or 4 are unacceptable, use (2) below.

(2) With FRB in lowest position, setting 6 is always permitted. Proceed to Rule 2.

NOTE

If minor errors in level result in immersion to less than 1 ft (0.3 m) in current speeds less than 1.64 fps (0.5 m/s), it is not essential to adjust launch setting.

RULE 2

LNCG setting to give Nose and Tail Clearance. Select from Table 2-9 a setting permitted by Rule 1, that gives:

a. N greater than H.

b. T greater than G.

If these requirements are met, select setting with least difference between N and H. If not, proceed to Rule 3.

RULE 3

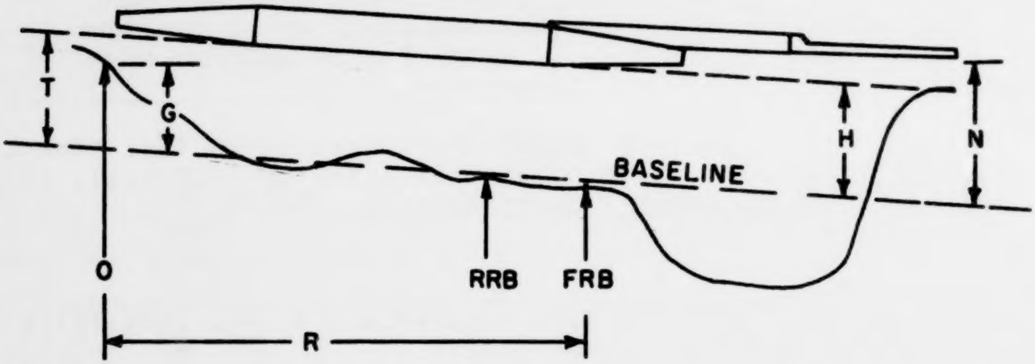
FRB and RRB setting to increase Nose and Tail Clearance. Raise both FRB and RRB [maximum lift 2.55 ft (0.69 m)]. Check if this addition to N and T is sufficient. See Figure below.

a. If N is insufficient but T is adequate, Rule 4a must be applied.

b. If T is insufficient but N is adequate, Rule 4b must be applied.

NOTE

Four men can lift Nose by 2 ft (0.6 m) and place it on LRP. This should not be taken into account during design but left to compensate for any inaccuracies in plotting the value of H.



RULE 4

Lowering RRB and FRB

a. Lowering RRB. If there is ample tail clearance, some increase in N can be obtained by having FRB in its highest position and RRB as low as tail clearance permits. This further increases N by approximately 1.75 times available tail clearance, adding the following height to the value of N obtained from Rule 3.

$$1.75\ [(T + 0.69) - G]\ \text{m}$$

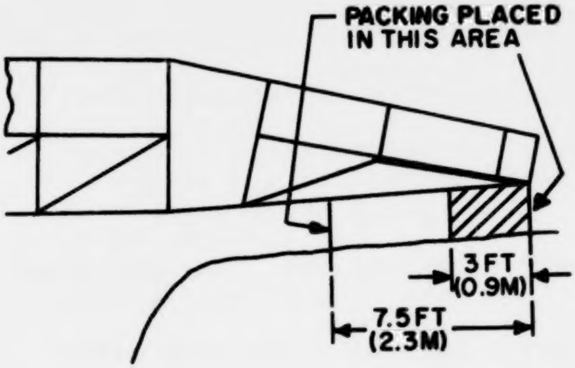
$$1.75\ [T\ + 2.25) - G)]\ \text{ft}$$

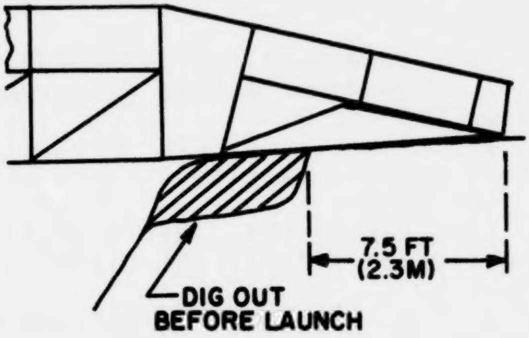
b. Lowering FRB. If there is ample nose clearance, some increase in T can be obtained by having RRB in its highest position and FRB as low as nose clearance permits. This further increases T by approximately 0.2 times available nose clearance from Rule 3.

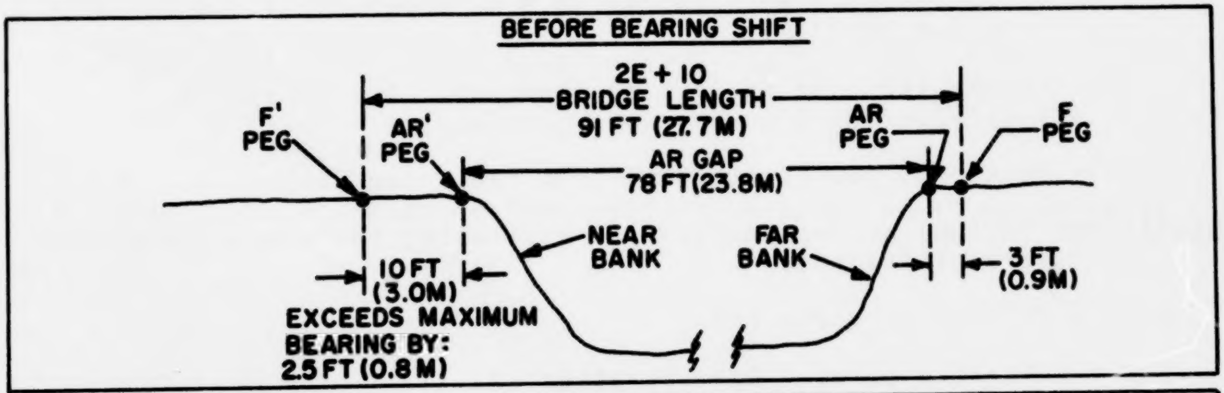
$$0.2\ [(N + 0.69) - H]\ \text{m}$$

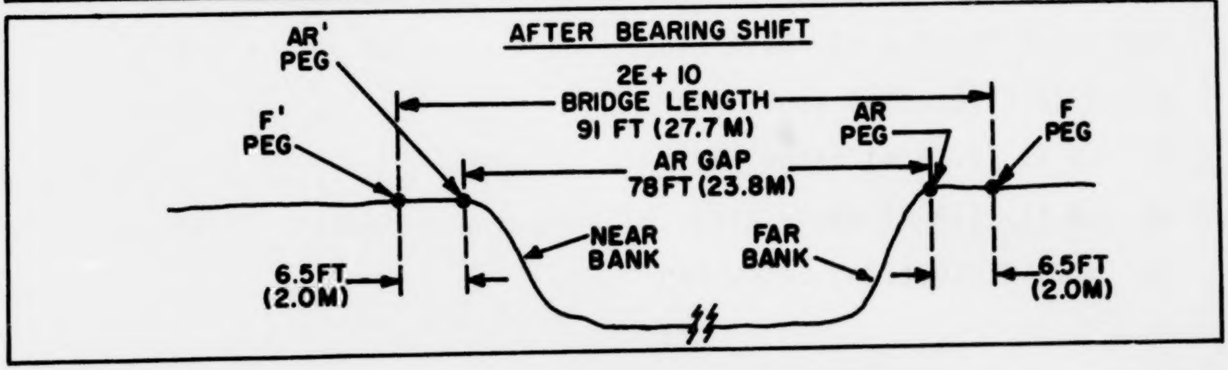
$$0.2\ [(N + 2.25) - H]\ \text{ft}$$

(5) Bearing Check. Check to ensure that the minimum bearing on the far bank is 3.0 ft (0.9 m), and that the maximum bearing of 7.5 ft (2.3 m) on near bank is not exceeded. If bearing does exceed 7.5 ft (2.3 m), place 3 ft (0.9 m) of packing in area shown, dig out, or shift excess bearing to far bank.









EXAMPLE:

DS DESIGN

a. Measure AR gap 62 ft (18.9 m) given.

b. Select bridge (see Table 2-3).

Required MLC 60

Select DS 7 bay 73 ft (22.3 m)

c. Locate and take elevations of key construction and other points: F, FRB, F', RRB and O.

(1) Locate F. 3 ft (0.9 m) from far bank AR peg. See paragraph 2-7, d (3) (a) 1.

(2) Locate F'. F' = Bridge length - (AR gap + far bank bearing). If maximum bearing is exceeded, choose option. See paragraph 2-7. d. (3) (b) 1.

In this example packing will be used:

(3) Locate FRB. Distance from AR peg on bank to FRB (Y). See paragraph 2-7. d. (3) (a) 2.

= Brg length - (AR gap + 4.5 ft (1.4 m))

= 73 ft (22.3 m) - 62 ft (18.9 m) + 4.5 ft (1.4 m)
= 6.5 ft (2 m).

(4) Locate RRB. 15 ft (4.6 m) from FRB. See paragraph 2-7. d. (3) (a) 3.

(5) Locate O. 52 ft (15.8 m) from FRB. See Table 2-3.

ELEVATIONS (Assume no instruments are available; therefore elevations are estimated).

F	4.9 ft (1.5 m) above FRB
FRB	Reference point - 0.0 elevation
RRB	1.6 ft (0.5 m) above FRB
O	3.28 ft (1.0 m) above FRB
F'	.5 ft (0.15 m) below FRB
AR	4 ft (1.2 m) above FRB
AR'	1.5 ft (0.45 m) below FRB

SLOPE CHECK

F is 5.4 ft (1.65 m) above F'. Maximum height difference for 2E + 7 bay bridge is 7.3 ft (2.22 m) (1/10th of bridge length). 5.4 ft (1.65 m) is less than 7.3 ft (2.22 m); therefore slope is OK.

Plot Cross Section on Graph Paper. See paragraph 2-7.d.(3)(c)2).

1. Mark FRB location near center of graph paper.
2. Determine suitable scale. Exaggerate vertical scale.
3. Mark location of F, F', RRB, O, AR, AR' and depth of gap on graph paper.
4. Join all marks with line giving rough profile of site.
5. Using straight edge, join FRB and RRB with line which extends beyond O and F pegs. This is baseline of bridge.
6. Using straight edge, join FRB and F with line to form baseline to check deflection.
7. Draw horizontal line from FRB over gap. This line is drawn to scale to represent W distance.

The following can now be determined from graph:

Slope check - elevation of F in relation to F'.

H - The vertical distance from baseline to F.

G - The vertical distance from baseline to O (below baseline is negative).

C - the vertical distance from deflection baseline to water level.

DETERMINE:

H = 12.5 ft (3.81 m)

G = 2.5 ft (0.76 m)

C = 8.5 ft (2.59 m)

d. Launch design.

(1) Rule 1.

Banks greater than 3.1 ft (0.95 m): Therefore, proceed to Rule 2.

(2) Rule 2.

Requires: N to be greater than H (from graph H = 12.5 ft (3.81 m).

AND

T to be greater than G (from graph G = -2.50 ft (0.76 m)

From Table 2-9, select nose cross girder setting that will give values of N and T greater than H and G, or select setting that is closest to H and G.

Setting 2 provides:

N = 6.6 ft	Not greater than 12.5 ft
(2.01 m	Not greater than 3.81 m)
T = 1.7 ft	Greater than - 2.50 ft
(0.52 m	Greater than - 0.76 m)

Proceed to Rule 3.

(3) Rule 3.

Raise RB and RRB.

Lift required: 12.5 ft - 6.6 ft = 5.9 ft

(3.81 m - 2.01 m = 1.8 m)

Maximum lift available by raising both FRB and RRB is 2.25 ft (0.69 m); therefore:

New N = 6.6 ft + 2.25 ft = 8.85 ft
2.01 m + 0.69 m = 2.7 m)

T = 1.7 ft + 2.25 ft = 3.95 ft
0.52 m + 0.69 m = 1.21 m)

N is still not greater than H, but T is much greater than G; proceed to Rule 4a.

(4) Rule 4a.

Lower RRB.

If lowered maximum amount (where end of bridge touches ground) increased lift.

US

N = 8.85 + 1.75 [(1.7 + 2.25) - (-2.50)] ft
= 8.85 + 1 75 [(3.95 - (-2.50)] ft
= 8.85 + 1 75 (6.45) ft
= 8.85 + 11.29 ft
= 20.14 ft

Metric

N = 2.7 + 1.75 [(0.52 + 0.69) - (-0.76)] m
= 2.7 + 1.75 [1.21) - (-.76)] m
= 2.7 + 1.75 (1.97) m
= 2.7 + 3.45 m
= 6.15 m

(5) Locate RRB. 15 ft (4.6 m) from FRB. See paragraph 2-7. d. (3) (9) 3.

(6) Locate 0. 52 ft (15.8 m) from FRB. See Table 2-3.

FINAL DESIGN

DS 7 bay 73 ft (22.3 m)

FRB setting. (Set FRB before RRB). Set in highest position immediately before launch.

RRB setting. (Set RRB after FRB). Set in a low to mid position.

Prepare to pack under near bank end of bridge as maximum bearing exceeded.

e. Double Story (DS)(2E + 1 thru 2E + 12 bay) DESIGN (Restricted Site).

(1) The design procedure for DS bridges (2E + 1 thru 2E + 12 bay) on restricted sites is the same as for normal sites except that:

(a) The length of the launching nose is increased by one or two launching nose heavy units. The decrease in the amount of R distance required by increasing nose length can be seen in Table 2-10 below.

Table 2-10. EFFECT OF INCREASING NOSE LENGTH (DS BRIDGES) ON R DISTANCE

No of LNH added	R DISTANCE											
	Length of bridge: 2E+No. of Bays											
	1 ft m	2 ft m	3 ft m	4 ft m	5 ft m	6 ft m	7 ft m	8 ft m	9 ft m	10 ft m	11 ft m	12 ft m
0	33 10	39 11.9	40 12.2	43 13.1	49 14.9	49 14.9	52 15.8	55 16.8	58 17.7	64 19.5	67 20.4	71 21.6
1	30 9.2	30 9.2	30 9.2	30 9.2	30 9.2	36 11.0	42 12.8	42 12.8	48 14.6	54 16.5	54 16.5	54 16.5
2	NO ADVANTAGE					30 9.2	36 11.0	36 11.0	42 12.8	42 12.8	42 12.8	48 14.6

NOTE: The distance for construction behind the FRB cannot be less than 30 ft (9.2 m).

If a vehicle and push bar are needed to boom bridge, add 37 ft (11.3 m) to R distance given.

(b) During construction, the number of times that the bridge is boomed (moved) will be increased.

SECTION II. TRANSPORT AND PALLETIZATION

	PARAGRAPH	PAGE
Type and Quantity of Sets Issued Per Company	2-8	2-45
Transport Requirements	2-9	2-60
Quantity of Components Per Bridge	2-10	2-60
Basket Loads Per Bridge	2-11	2-67
Pallet Loads Per Bridge/Palletization	2-12	2-82
Loading Pallets on Transport Vehicles	2-13	2-220
Off-Loading Pallets from Transport Vehicles	2-14	2-232
Bridging Phase Operations	2-15	2-247

2-8. TYPE AND QUANTITY OF SETS ISSUED PER COMPANY.

a. The MGB company should be issued the sets listed below (in accordance with TO&E 05-74H). Modifications of this TO&E has resulted in some units receiving quantities other than those shown below.

Bridge Erection Set	2 Sets (1 per Platoon)
Bridge Set	4 Sets (2 per Platoon)
Link Reinforcement Set	2 Sets (1 per Platoon)

b. Though issued the quantities in a. above, the MGB company can not deploy all four bridge sets at one time. This restriction is due to the quantity of erection components in one erection set.

c. One MGB company can deploy and construct the following bridges at one time:

2-2E + 12 bay DS
or
6-5 bay SS (8, if 2 are push launched).
or
2-12 bay SS
or
2-2E + 22 bay DS (with reinforcement)

d. The company's complete bridge equipment can be loaded in many ways to fit its various missions. One loading plan that should be considered is to palletize and load or prepare for loading the following:

2-8. TYPE AND QUANTITY OF SETS ISSUED PER COMPANY (Cont).

(1) One platoon's bridge equipment is palletized to provide:

(a) 1-2E + 12 bay DS from one bridge set, with the necessary erection set components.

AND

(b) 3-5 bay SS from the second bridge set with one erection component pallet complete. The other two will be short some components.

(2) The other platoon's bridge equipment is palletized to provide:

(a) 1-2E + 12 bay DS from one bridge set with the necessary erection set components.

AND

(b) 1-12 bay SS

The erection component pallet would be used with either (a) or (b) above.

e. The above will provide the company with the ability to respond to simultaneous missions requiring:

1-2E + 12 bay DS
AND, EITHER
1-5 bay SS
AND
1-12 bay SS
OR
a second 2E + 12 bay DS

If required, a 2E + 22 bay DS (with reinforcement) mission could be accomplished by combining the assets of both platoons.

f. Many variations of pallet loading are possible to suit specific missions. The pallet loads that are detailed in this section are to be used only as guides. They are not to be considered standard or unchangeable.

g. Tables 2-15, 2-16 and 2-17 provide the user with:

(1) The quantity of components per pallet load.

(2) The number and type of pallet loads for a specific mission.

(3) An example of the pallets providing spare components.

2-8. TYPE AND QUANTITY OF SETS ISSUED PER COMPANY (Cont).

For Example:

Given the mission to provide two MLC 60 bridges up to and including 2E + 12 bay, 103 ft (31.4 m) long, the unit could load:

One bridge set in each platoon with components as shown in columns 1 through 8. The spares loads, columns 10 through 12 and 17 through 25, are bridge set components not needed for 2E + 12 bay.

The other bridge set in each platoon could be loaded in any configuration. In this example it is loaded for a 12 bay SS mission, columns 13 through 16. Again, the spares loads, columns 10 through 12 and 17 through 25, are bridge set components not needed for the 12 bay SS.

Loaded in this manner the unit could respond very quickly to simultaneous missions calling for two MLC 60 bridges.

If MLC 60 was not required for shorter lengths, any mission requiring a lower MLC and shorter length could be accomplished by shifting the few required erection and launch components from the ED load to the ES load, if the ED was not in use at the time for a double story bridge.

This configuration also provides the unit with the ability to respond very quickly to a mission calling for one 2E + 22 bay, 163 ft (49.7 m) bridge, MLC 60 (reinforced) with components from the Link Reinforcement Set.

NOTE

There are so many possible variations that it is not feasible to tabulate all of them. The tables show the most widely used load configurations.

TABLE 2-15. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 2E+12 BAY DS (-ED)							ERECTION LOADS		SPARES		
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE #3 SETS	LRD	EOB1	EOB2	DSC	DSC	DSC	DSC	ED	ES	DSC1	DSC2	DSC
Aid, Panel Erection	3			3								2				
Adapter, Pallet	12			12		1			1		1	1	1	1		
Adapter, Push Bar	2			2								1	1			
Bag, Equipment	2	8	8	18		1	1	1	1	1	1	1	1	1	1	1
Bar Assy, Launch	2			2								1	1			
Bar, Carrying	46			46								24	16			
Basket, Equipment	6	14	14	34		2	2	2	2	2	2	4	3	2	2	2
Beam Assy, Roller	4			4								2	2			
Beam Assy, Bankseat		7	7	14		1	1									
Brace, Sway		19	19	38		2	2	3	3	3	3			1	2	3
Bumper, Rear, Rubber	25			25	1	1	1	1	1	1	1	1	1	1	1	1
Cable, Extractor	1			1								1				
Chain, Tie-down	50			50	2	2	2	2	2	2	2	2	2	2	2	2
Clip, Retainer	56	200	200	456		14	22	14	14	14	14	30	39	18	18	18
Curb		42	42	84		4	4	6	6	6	6			2	4	6
Deck		74	74	148	4	8	8	12	12	12	12			4	8	12
Girder, Cross Frame	3			3								2				
Girder, Launching Nose	2			2								1	1			
Girder, Push Bar	2			2								1	1			
Handle, Carrying	46			46								24	16			
Jack, 15 ton	7			7								5	2			
Lug, Tie-down	200			200	8	8	8	8	8	8	8	8	8	8	8	8
Marker, Guide		24	24	48	22											
Nose Assy, Launching	8			8								6	2			
Nose, Light, Front	5			5								1	1			
Nose, Light, Rear	5			5								1	1			
Pallet (trk mtd)	13			13	1		1	1		1					1	1
Pallet (trlr mtd)	12			12		1			1		1	1	1	1		

TABLE 2-15. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 2E+12 BAY DS (-ED)							ERECTION LOADS		SPARES		
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	LRD	EOB1	EOB2	DSC	DSC	DSC	DSC	ED	ES	DSC1	DSC2	DSC
Panel, Bottom		26	26	52				6	6	6	6			2	4	6
Panel, End Taper		5	5	10		2	2									
Panel, Junction		5	5	10		2	2									
Panel, Top		34	34	68		4	4	6	6	6	6			2	4	6
Pedestal, Adj.	2			2								1	1			
Pedestal, Building	7			7									2			
Pin, Bracing	8	68	68	144		4	4	6	6	6	6	6	2	10	10	10
Pin, Launching Nose	23			23								9	10			
Pin, Panel	2	95	95	192		13	13	13	13	13	13	2	2	13	13	13
Pin, Panel, Headless		5	5	10			4					2	4			
Plate, Base, DS	6			6								4				
Plate, Base, SS	7			7									4			
Post Assy, Jack	4			4								2	2			
Post, Launching Nose				4								2	2			
Ramp, Long		15	15	30	12	2										
Ramp, Short		29	29	58												
Roller, Landing	4			4								1	1			
Roller, Launching Nose	2			2								1	1			
Seat, Building Frame	5			5								4				
Strap, 5,000 lb	100			100	4	4	4	4	4	4	4	4	4	4	4	4
Strap, 10,000 lb	225			225	9	9	9	9	9	9	9	9	9	9	9	9
Support Assy, Adj.	6			6								4	2			
Support Assy, Fixed	7			7									2			
Support, Jacking	5			5								2	2			
Sling, Steel Wire	1			1								1				
Tie-down, Aircraft	50			50	2	2	2	2	2	2	2	2	2	2	2	2

TABLE 2-15. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 12 BAY SS (-ES)				SPARES								
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	SRDC12	SSE9	SSC12	SSC11	#4	#5	#6	#7	#8	#9	#10	#11	#12
Aid, Panel Erection	3			3						1							
Adapter, Pallet	12			12		1		1		1		1		1		1	
Adapter, Push Bar	2			2													
Bag, Equipment	2	8	8	18								2	1	1	1	1	1
Bar Assy, Launch	2			2													
Bar, Carrying	46			46						6							
Basket, Equipment	6	14	14	34		1	1	1				1	1	1	1	1	1
Beam Assy, Roller	4			4													
Beam Assy, Bankseat		7	7	14		2									2	4	4
Brace, Sway		19	19	38								4	4	4	4		
Bumper, Rear, Rubber	25			25	1	1	1	1	1	1	1	1	1	1	1	1	1
Cable, Extractor	1			1													
Chain, Tie-down	50			50	2	2	2	2	2	2	2	2	2	2	2	2	2
Clip, Retainer	56	200	200	456								66	35	35	35	35	35
Curb		42	42	84	24							4	4	4	4		
Deck		74	74	148	20	8	12	8				4	4				
Girder, Cross Frame	3			3						1							
Girder, Launching Nose	2			2	2	2	2	1	1	2	1	1	1	1	1	1	1
Girder, Push Bar	2			2							86						
Handle, Carrying	46			46						6							
Jack, 15 ton	7			7													
Lug, Tie-down	200			200	8	8	8	8	8	8	8	8	8	8	8	8	8
Marker, Guide		24	24	48		12				14							
Nose Assy, Launching	8			8													
Nose, Light, Front	5			5						3							
Nose, Light, Rear	5			5						3							
Pallet (trk mtd)	13			13	1		1		1		1		1		1		1
Pallet (trlr mtd)	12			12		1		1		1		1		1		1	

TABLE 2-15. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 12 BAY SS (-ES)				SPARES								
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	SRDC12	SSE9	SSC12	SSC11	#4	#5	#6	#7	#8	#9	#10	#11	#12
Panel, Bottom		26	26	52							4	4	4	4			
Panel, End Taper		5	5	10							2	2	2				
Panel, Junction		5	5	10							2	2	2				
Panel, Top		34	34	68		8	8	8									
Pedestal, Adj.	2			2													
Pedestal, Building	7			7						5							
Pin, Bracing	8	68	68	144								14	12	12	12	12	12
Pin, Launching Nose	23			23								4					
Pin, Panel	2	95	95	192		7	7	7				8	8	8	8	9	9
Pin, Panel, Headless		5	5	10													
Plate, Base, DS	6			6						2							
Plate, Base, SS	7			7						3							
Post Assy, Jack	4			4													
Post, Launching Nose				4													
Ramp, Long		15	15	30					10		2	2	2				
Ramp, Short		29	29	58	14										15	14	15
Roller, Landing	4			4						2							
Roller, Launching Nose	2			2													
Seat, Building Frame	5			5						1							
Strap, 5,000 lb	100			100	4	4	4	4	4	4	4	4	4	4	4	4	4
Strap, 10,000 lb	225			225	9	9	9	9	9	9	9	9	9	9	9	9	9
Support Assy, Adj.	6			6													
Support Assy, Fixed	7			7						5							
Support, Jacking	5			5						1							
Sling, Steel Wire	1			1													
Tie-down, Aircraft	50			50	2	2	2	2	2	2	2	2	2	2	2	2	2

TABLE 2-16. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 2E+12 BAY DS (-ED)							EREC-TION LOAD	SPARES				
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	LRD	EOB1	EOB2	DSC	DSC	DSC	DSC	ED	DSC	#2	#3	#4	#5
Aid, Panel Erection	3			3								2		1			
Adapter, Pallet	12			12		1			1		1	1		1	1	1	
Adapter, Push Bar	2			2								1		1			
Bag, Equipment	2	8	8	18		1	1	1	1	1	1	1	1	3			1
Bar Assy, Launch	2			2								1		1			
Bar, Carrying	46			46								24					
Basket, Equipment	6	14	14	34		2	2	2	2	2	2	4	2	2			2
Beam Assy, Roller	4			4								2					
Beam Assy, Bankseat		7	7	14		1	1										1
Brace, Sway		19	19	38		2	2	3	3	3	3		3				2
Bumper, Rear, Rubber	25			25	1	1	1	1	1	1	1	1	1	1	1	1	1
Cable, Extractor	1			1								1					
Chain, Tie-down	50			50	2	2	2	2	2	2	2	2	2	2	2	2	2
Clip, Retainer	56	200	200	456		14	22	14	14	14	14	30	18				67
Curb		42	42	84		4	4	6	6	6	6		6				4
Deck		74	74	148	4	8	8	12	12	12	12		12				
Girder, Cross Frame	3			3								2		1			
Girder, Launching Nose	2			2								1		1			
Girder, Push Bar	2			2								1		1			
Handle, Carrying	46			46								24					
Jack, 15 ton	7			7								5					
Lug, Tie-down	200			200	8	8	8	8	8	8	8	8	8	8	8	8	8
Marker, Guide		24	24	48	22								2				
Nose Assy, Launching	8			8								6		2			
Nose, Light, Front	5			5								1		1			
Nose, Light, Rear	5			5								1		1			
Pallet (trk mtd)	13			13	1		1	1		1			1				1
Pallet (trlr mtd)	12			12		1			1		1	1		1	1	1	

TABLE 2-16. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN: ER . SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	MISSION 2E+12 BAY DS (-ED) LRD	EOB1	EOB2	DSC	DSC	DSC	DSC	ERECTION LOAD ED	SPARES DSC	#2	#3	#4	#5
Panel, Bottom		26	26	52				6	6	6	6		6				
Panel, End Taper		5	5	10		2	2										2
Panel, Junction		5	5	10		2	2										2
Panel, Top		34	34	68		4	4	6	6	6	6		6				
Pedestal, Adj.	2			2								1		1			
Pedestal, Building	7			7										1			
Pin, Bracing	8	68	68	144		4	4	6	6	6	6	6	10				24
Pin, Launching Nose	23			23								9		2			
Pin, Panel	2	95	95	192		13	13	13	13	13	13	2	13	18			18
Pin, Panel, Headless		5	5	10			4					2		4			
Plate, Base, DS	6			6								4		2			
Plate, Base, SS	7			7										1			
Post Assy, Jack	4			4								2					
Post, Launching Nose				4								2		2			
Ramp, Long		15	15	30	12	2											4
Ramp, Short		29	29	58													
Roller, Landing	4			4								1					
Roller, Launching Nose	2			2								1		1			
Seat, Building Frame	5			5								4		1			
Strap, 5,000 lb	100			100	4	4	4	4	4	4	4	4	4	4	4	4	4
Strap, 10,000 lb	225			225	9	9	9	9	9	9	9	9	9	9	9	9	9
Support Assy, Adj.	6			6	2							4		2			
Support Assy, Fixed	7			7										1			
Support, Jacking	5			5								2					
Sling, Steel Wire	1			1								1					
Tie-down, Aircraft	50			50	2	2	2	2	2	2	2	2	2	2	2	2	2

TABLE 2-16. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN: ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	MISSION 3-5 BAY SS ES5	SRDC5	ES5	SRDC5	ES5	SRDC5	SPARES "6	#7	#8	#9	#10	#11
Aid, Panel Erection	3			3												
Adapter, Pallet	12			12	1		1		1					1		1
Adapter, Push Bar	2			2												
Bag, Equipment	2	8	8	18	1		1		1		1	1	1			
Bar Assy, Launch	2			2												
Bar, Carrying	46			46	8		8		6							
Basket, Equipment	6	14	14	34	2	1	2	1	2	1	1	1	1			
Beam Assy, Roller	4			4	1		1									
Beam Assy, Bankseat		7	7	14	2		2		2		1	1				3
Brace, Sway		19	19	38							2	2	6	7		
Bumper, Rear, Rubber	25			25	1	1	1	1	1	1	1	1	1	1	1	1
Cable, Extractor	1			1												
Chain, Tie-down	50			50	2	2	2	2	2	2	2	2	2	2	2	2
Clip, Retainer	56	200	200	456	16		16		16		67	67	67			
Curb		42	42	84		10		10		10	4	4	4			
Deck		74	74	148		20		20		20	4	4				
Girder, Cross Frame	3			3												
Girder, Launching Nose	2			2												
Girder, Push Bar	2			2												
Handle, Carrying	46			46	8		8		6							
Jack, 15 ton	7			7	1	1										
Lug, Tie-down	200			200	8	8	8	8	8	8	8	8	8	8	8	8
Marker, Guide		24	24	48	8		8		8							
Nose Assy, Launching	8			8												
Nose, Light, Front	5			5	1		1		1							
Nose, Light, Rear	5			5	1		1		1							
Pallet (trk mtd)	13			13		1		1		1	1	1	1		1	
Pallet (trlr mtd)	12			12	1		1		1					1		1

TABLE 2-16. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 3-5 BAY SS						SPARES					
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	ES5	SRDC5	ES5	SRDC5	ES5	SRDC5	#6	#7	#8	#9	#10	#11
Panel, Bottom		26	26	52									12	10		
Panel, End Taper		5	5	10							2	2				
Panel, Junction		5	5	10							2	2				
Panel, Top		34	34	68	10		10		10							
Pedestal, Adj.	2			2												
Pedestal, Building	7			7	2		2		2							
Pin, Bracing	8	68	68	144							24	24	24			
Pin, Launching Nose	23			23	4		4		4							
Pin, Panel	2	95	95	192	5	7	5	7	5	7	10	10	7			
Pin, Panel, Headless		5	5	10												
Plate, Base, DS	6			6												
Plate, Base, SS	7			7	2		2		2							
Post Assy, Jack	4			4	2											
Post, Launching Nose	4			4												
Ramp, Long		15	15	30							2	2			8	
Ramp, Short		29	29	58		14		14		14						16
Roller, Landing	4			4	1		1		1							
Roller, Launching Nose	2			2												
Seat, Building Frame	5			5												
Strap, 5,000 lb	100			100	4	4	4	4	4	4	4	4	4	4	4	4
Strap, 10,000 lb	225			225	9	9	9	9	9	9	9	9	9	9	9	9
Support Assy, Adj.	6			6												
Support Assy, Fixed	7			7	2		2		2							
Support, Jacking	5			5	2		1									
Sling, Steel Wire	1			1												
Tie-down, Aircraft	50			50	2	2	2	2	2	2	2	2	2	2	2	2

TABLE 2-17. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 2E+12 BAY DS (-ED)							ERECTION LOAD ED	SPARES				
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	LRD	EOB1	EOB2	DSC	DSC	DSC	DSC		DSC	#2	#3	#4	#5
Aid, Panel Erection	3			3								2		1			
Adapter, Pallet	12			12		1			1		1	1	1	1			
Adapter, Push Bar	2			2								1		1			
Bag, Equipment	2	8	8	18		1	1	1	1	1	1	1	1	1	1	1	1
Bar Assy, Launch	2			2								1		1			
Bar, Carrying	46			46								24			7	7	8
Basket, Equipment	6	14	14	34		2	2	2	2	2	2	4	2	1	1	1	1
Beam Assy, Roller	4			4								2		2			
Beam Assy, Bankseat		7	7	14		1	1								3	3	4
Brace, Sway		19	19	38		2	2	3	3	3	3		2				
Bumper, Rear, Rubber	25			25	1	1	1	1	1	1	1	1	1	1	1	1	1
Cable, Extractor	1			1								1					
Chain, Tie-down	50			50	2	2	2	2	2	2	2	2	2	2	2	2	2
Clip, Retainer	56	200	200	456		14	22	14	14	14	14	30	18	56	56	56	56
Curb		42	42	84		4	4	6	6	6	6		4				
Deck		74	74	148	4	8	8	12	12	12	12		8				
Girder, Cross Frame	3			3								2		1			
Girder, Launching Nose	2			2								1		1			
Girder, Push Bar	2			2								1		1			
Handle, Carrying	46			46								[illegible]			7	7	8
Jack, 15 ton	7			7								5		2			
Lug, Tie-down	200			200	8	8	8	8	8	8	8	8	8	8	8	8	8
Marker, Guide		24	24	48	22									4			
Nose Assy, Launching	8			8								6		2			
Nose, Light, Front	5			5								1		4			
Nose, Light, Rear	5			5								1		4			
Pallet (trk mtd)	13			13	1		1	1		1					1	1	1
Pallet (trlr mtd)	12			12		1			1		1	1	1	1			

TABLE 2-17. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 2E+12 BAY DS (-ED)							ERECTION LOAD ED	SPARES				
	ER . SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	LRD	EOB1	EOB2	DSC	DSC	DSC	DSC		DSC	#2	#3	#4	#5
Panel, Bottom		26	26	52				6	6	6	6		4				
Panel, End Taper		5	5	10		2	2										
Panel, Junction		5	5	10		2	2										
Panel, Top		34	34	68		4	4	6	6	6	6		4				
Pedestal, Adj.	2			2								1		1			
Pedestal, Building	7			7										7			
Pin, Bracing	8	68	68	144		4	4	6	6	6	6	6	10	34	10	10	10
Pin, Launching Nose	23			23								9		14			
Pin, Panel	2	95	95	192		13	13	13	13	13	13	2	13	5	5	5	6
Pin, Panel, Headless		5	5	10			4					2					
Plate, Base, DS	6			6								4		2			
Plate, Base, SS	7			7										7			
Post Assy, Jack	4			4								2		2			
Post, Launching Nose				4								2		2			
Ramp, Long		15	15	30	12	2											
Ramp, Short		29	29	58													
Roller, Landing	4			4								3		1			
Roller, Launching NOse	2			2								1		1			
Seat, Building Frame	5			5								4		1			
Strap, 5,000 lb	100			100	4	4	4	4	4	4	4	4	4	4	4	4	4
Strap, 10,000 lb	225			225	9	9	9	9	9	9	9	9	9	9	9	9	9
Support Assy, Adj.	6			6								4		2			
Support Assy, Fixed	7			7										7			
Support, Jacking	5			5								2		3			
Sling, Steel Wire	1			1								1					
Tie-down, Aircraft	50			50	2	2	2	2	2	2	2	2	2	2	2	2	2

TABLE 2-17. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 2E+12 BAY DS (-ED)							SPARES				
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	LRD	EOB1	EOB2	DSC	DSC	DSC	DSC	#6	#7	#8	#9	#10
Aid, Panel Erection	3			3												
Adapter, Pallet	12			12		1			1		1			1	1	1
Adapter, Push Bar	2			2												
Bag, Equipment	2	8	8	18		1	1	1	1	1	1					
Bar Assy, Launch	2			2												
Bar, Carrying	46			46												
Basket, Equipment	6	14	14	34		2	2	2	2	2	2					
Beam Assy, Roller	4			4												
Beam Assy, Bankseat		7	7	14		1	1									
Brace, Sway		19	19	38		2	2	3	3	3	3					4
Bumper, Rear, Rubber	25			25	1	1	1	1	1	1	1	1	1	1	1	1
Cable, Extractor	1			1												
Chain, Tie-down	50			50	2	2	2	2	2	2	2	2	2	2	2	2
Clip, Retainer	56	200	200	456		4	4	6	6	6	6					16
Curb		42	42	84	4	8	8	12	12	12	12					4
Deck		74	74	148												
Girder, Cross Frame	3			3												
Girder, Launching Nose	2			2												
Girder, Push Bar	2			2												
Handle, Carrying	46			46												
Jack, 15 ton	7			7												
Lug, Tie-down	200			200	8	8	8	8	8	8	8	8	8	8	8	8
Marker, Guide		24	24	48	22											
Nose Assy, Launching	8			8												
Nose, Light, Front	5			5												
Nose, Light, Rear	5			5												
Pallet (trk mtd)	13			13	1		1	1		1		1	1			
Pallet (trlr mtd)	12			12		1			1		1			1	1	1

TABLE 2-17. QUANTITY OF COMPONENTS PER PALLET LOAD AND TYPE OF PALLET LOADS PER MISSION. (ONE PLATOON)

	QUANTITY OF COMPONENTS IN:				MISSION 2E+12 BAY DS (-ED)							SPARES				
	ER. SET	BRG. SET #1	BRG. SET #2	TOTAL OF THE 3 SETS	LRD	EOB1	EOB2	DSC	DSC	DSC	DSC	#6	#7	#8	#9	#10
Panel, Bottom		26	26	52				6	6	6	6					
Panel, End Taper		5	5	10		2	2									2
Panel, Junction		5	5	10		2	2									2
Panel, Top		34	34	68		4	4	6	6	6	6					
Pedestal, Adj.	2			2												
Pedestal, Building	7			7												
Pin, Bracing	8	68	68	144		4	4	6	6	6	6					
Pin, Launching Nose	23			23												
Pin, Panel	2	95	95	192		13	13	13	13	13	13					
Pin, Panel, Headless		5	5	10			4									
Plate, Base, DS	6			6												
Plate, Base, SS	7			7												
Post Assy, Jack	4			4												
Post, Launching Nose				4												
Ramp, Long		15	15	30	12	2										2
Ramp, Short		29	29	58								14	15	14	15	
Roller, Landing	4			4												
Roller, Launching Nose	2			2												
Seat, Building Frame	5			5												
Strap, 5,000 lb	100			100	4	4	4	4	4	4	4	4	4	4	4	4
Strap, 10,000 lb	225			225	9	9	9	9	9	9	9	9	9	9	9	9
Support Assy, Adj.	6			6												
Support Assy, Fixed	7			7												
Support, Jacking	5			5												
Sling, Steel Wire	1			1												
Tie-down, Aircraft	50			50	2	2	2	2	2	2	2	2	2	2	2	2

2-9. TRANSPORT REQUIREMENTS.

All the components needed to build and launch the MGB are transported to and from the bridge site on 5 ton dump trucks, and 4-ton 4-wheel trailers. These vehicles are also used to transport personnel, supplies, material, and other equipment when the bridge has been off loaded.

2-10. QUANTITY OF COMPONENTS PER BRIDGE

The quantity of components needed for each bridge length is listed in the following tables:

Bridge Length	Table
4 through 12 bay SS	2-18
2E + 1 through 2E + 12 bay DS	2-19

Table 2-18. Components Per Bridge Length. (Single Story)

Bridge Length No. of Bays		4	5	6	7	8	9	10	11	12
Component	Nose Construction	LLN	LLN	LLN	LLN	LLN	5N1	5N1	6N1	6N1
Adapter, Push Bar		-	-	-	-	-	1	1	1	1
Bag, Equipment		1	1	1	1	1	1	1	1	1
Bar Assy, Launch (long)		-	-	-	-	-	-	-	-	-
Bar Assy, Launch (short)		-	-	-	-	-	1	1	1	1
Bar, Carrying		8	8	16	16	16	16	16	16	16
Basket, Equipment		3	3	4	5	5	5	6	6	6
Beam Assy, Roller		1	1	1	1	1	1	1	1	1
Beam, Bankseat		2	2	2	2	2	2	2	2	2
Brace, Sway		-	-	-	-	-	-	-	-	-
Bracket Assy, Lifting		2	2	2	2	2	2	2	2	2
Cable, Extractor		1	1	1	1	1	1	1	1	1
Capsill, Bridging		-	-	-	-	-	-	-	-	-
Clip, Retainer		14	16	18	20	22	32	34	37	39
Curb		8	10	12	14	16	18	20	22	24
Deck		16	20	24	28	32	36	40	44	48
Girder, Cross Frame		-	-	-	-	-	-	-	-	-
Girder, Launching Nose		-	-	-	-	-	1	1	1	1
Girder, Longitudinal		-	-	-	-	-	-	-	-	-
Girder, Push Bar		-	-	-	-	-	1	1	1	1
Guide Marker		6	8	8	10	10	12	12	14	14
Handle, Carrying		8	8	16	16	16	16	16	16	16
Jack, Bridge, 15 ton		2	2	2	2	2	2	2	2	2

Table 2-18. Components Per Bridge Length. (Single Story) (Cont).

Bridge Length No. of Bays		4	5	6	7	8	9	10	11	12
Component	Nose Construction	LLN	LLN	LLN	LLN	LLN	5N1	5N1	6N1	6N1
Jack, Bridge, 20 ton		-	-	-	-	-	-	-	-	-
Link, Launching Nose		-	-	-	-	-	-	-	-	-
Nose Assy, Launching		-	-	-	-	-	5	5	6	6
Nose, Light, Front		1	1	1	1	1	1	1	1	1
Nose, Light, Rear		1	1	1	1	1	1	1	1	1
Pallet, Trk Mtd		1	1	2	2	2	2	3	3	3
Pallet, Trlr Mtd		1	1	1	1	2	2	2	2	2
Panel, Bottom		-	-	-	-	-	-	-	-	-
Panel, End Taper		-	-	-	-	-	-	-	-	-
Panel, Erection Aid		-	-	-	-	-	-	-	-	-
Panel, Junction		-	-	-	-	-	-	-	-	-
Panel, Top		8	10	12	16	20	18	20	22	24
Pedestal Assy, Adj		-	-	-	-	-	1	1	1	1
Pedestal Assy, Adj, MK2		-	-	-	-	-	-	-	-	-
Pedestal Building		2	2	2	2	2	2	2	2	2
Pin, Anchorage		-	-	-	-	-	-	-	-	-
Pin, Bracing		-	-	-	-	-	2	2	2	2
Pin, Capsill		-	-	-	-	-	-	-	-	-
Pin, Launching Nose		4	4	4	4	4	9	9	10	10
Pin, Panel		10	12	14	16	20	16	18	20	22
Pin, Panel, Headless		-	-	-	-	-	4	4	4	4
Plate, Base, DS		-	-	-	-	-	-	-	-	-

Table 2-18. Components Per Bridge Length. (Single Story) (Cont)

Bridge Length No. of Bays		4	5	6	7	8	9	10	11	12
Component	Nose Construction	LLN	LLN	LLN	LLN	LLN	5N1	5N1	6N1	6N1
Plate, Base, SS		2	2	2	2	2	4	4	4	4
Post Assy, Jack		2	2	2	2	2	2	2	2	2
Post, Launching Nose		-	-	-	-	-	2	2	2	2
Ramp, Long		-	-	-	-	-	-	-	-	-
Ramp, Short		14	14	14	14	14	14	14	14	14
Roller, Landing		1	1	1	1	1	1	1	1	1
Roller, Launching Nose		-	-	-	-	-	1	1	1	1
Roller, Rocking		-	-	-	-	-	-	-	-	-
Seat, Building Frame		-	-	-	-	-	-	-	-	-
Support Assy, Adjustable		-	-	-	-	-	-	-	-	-
Support Assy, Fixed		2	2	2	2	2	2	2	2	2
Support, Jack		-	-	-	-	-	2	2	2	2
Sling, Steel, Wire Rope		1	1	1	1	1	1	1	1	1
Wrench, Ratchet		-	-	-	-	-	-	-	-	-

Table 2-19. Components Per Bridge Length. (Double Story)
2E + 1 through 2E + 12 Bay

Bridge Length 2E + No. of Bays		1	2	3	4	5	6	7	8	9	10	11	12
Component	Nose Construction	2N1	3N1	3N1	3N1	4N1	4N1	4N1	5N1	5N1	5N1	6N1	6N1
Adapter, Push Bar		1	1	1	1	1	1	1	1	1	1	1	1
Bag, Equipment		1	1	1	1	1	1	1	2	2	2	2	2
Bar Assy, Launch (long)		-	-	-	-	-	-	-	-	-	-	-	-
Bar Assy, Launch (short)		1	1	1	1	1	1	1	1	1	1	1	1
Bar, Carrying		24	24	24	24	24	24	24	24	24	24	24	24
Basket, Equipment		8	9	10	10	11	11	12	12	13	14	14	15
Beam Assy, Roller		2	2	2	2	2	2	2	2	2	2	2	2
Beam, Bankseat		2	2	2	2	2	2	2	2	2	2	2	2
Brace, Sway		5	6	7	8	9	10	11	12	13	14	15	16
Bracket Assy, Lifting		2	2	2	2	2	2	2	2	2	2	2	2
Cable, Extractor		1	1	1	1	1	1	1	1	1	1	1	1
Capsill, Bridging		-	-	-	-	-	-	-	-	-	-	-	-
Clip, Retainer		47	52	56	60	65	69	73	78	83	87	92	96
Curb		10	12	14	16	18	20	22	24	26	28	30	32
Deck		24	28	32	36	40	44	48	52	56	60	64	68
Girder, Cross Frame		2	2	2	2	2	2	2	2	2	2	2	2
Girder, Launching Nose		1	1	1	1	1	1	1	1	1	1	1	1
Girder, Longitudinal		-	-	-	-	-	-	-	-	-	-	-	-
Girder, Push Bar		-	-	-	-	-	-	-	-	1	1	1	1
Guide Marker		12	12	14	14	16	16	18	18	20	20	22	22
Handle, Carrying		24	24	24	24	24	24	24	24	24	24	24	24
Jack, Bridge, 15 ton		5	5	5	5	5	5	5	5	5	5	5	5

Table 2-19. Components Per Bridge Length. (Double Story)
2E + 1 through 2E + 12 Bay (Cont).

Bridge Length 2E + No. of Bays		1	2	3	4	5	6	7	8	9	10	11	12
Component	Nose Construction	2N1	3N1	3N1	3N1	4N1	4N1	4N1	5N1	5N1	5N1	6N1	6N1
Jack, Bridge, 20 ton		-	-	-	-	-	-	-	-	-	-	-	-
Link, Launching Nose		-	-	-	-	-	-	-	-	-	-	-	-
Nose Assy, Launching		2	3	3	3	4	4	4	5	5	5	6	6
Nose, Light, Front		1	1	1	1	1	1	1	1	1	1	1	1
Nose, Light, Rear		1	1	1	1	1	1	1	1	1	1	1	1
Pallet, Trk Mtd		3	3	3	3	3	3	4	4	4	4	4	4
Pallet, Trlr Mtd		2	2	2	3	3	3	3	3	3	4	4	4
Panel, Bottom		2	4	6	8	10	12	14	16	18	20	22	24
Panel, End Taper		4	4	4	4	4	4	4	4	4	4	4	4
Panel, Erection Aid		2	2	2	2	2	2	2	2	2	2	2	2
Panel, Junction		4	4	4	4	4	4	4	4	4	4	4	4
Panel, Top		10	12	14	16	18	20	22	24	26	28	30	32
Pedestal Assy, Adj.		1	1	1	1	1	1	1	1	1	1	1	1
Pedestal Assy, Adj., MK2		-	-	-	-	-	-	-	-	-	-	-	-
Pedestal Building		-	-	-	-	-	-	-	-	-	-	-	-
Pin, Anchorage		-	-	-	-	-	-	-	-	-	-	-	-
Pin, Bracing		11	13	15	17	19	21	23	25	28	30	32	34
Pin, Capsill		-	-	-	-	-	-	-	-	-	-	-	-
Pin, Launching Nose		5	6	6	6	7	7	7	8	8	8	9	9
Pin, Panel,		31	35	39	43	47	51	55	59	63	67	71	75
Pin, Panel, Headless		4	4	4	4	4	4	4	4	4	4	4	4
Plate, Base, DS		4	4	4	4	4	4	4	4	4	4	4	4

Table 2-19. Components Per Bridge Length. (Double Story)
2E + 1 through 2E + 12 Bay (Cont).

Bridge Length 2E + No. of Bays		1	2	3	4	5	6	7	8	9	10	11	12
Component	Nose Construction	2N1	3N1	3N1	3N1	4N1	4N1	4N1	5N1	5N1	5N1	6N1	6N1
Plate, Base, SS		-	-	-	-	-	-	-	-	-	-	-	-
Post Assy, Jack		2	2	2	2	2	2	2	2	2	2	2	2
Post, Launching Nose		2	2	2	2	2	2	2	2	2	2	2	2
Ramp, Long		14	14	14	14	14	14	14	14	14	14	14	14
Ramp, Short		-	-	-	-	-	-	-	-	-	-	-	-
Roller, Landing		1	1	1	1	1	1	1	1	1	1	1	1
Roller, Launching Nose		1	1	1	1	1	1	1	1	1	1	1	1
Roller, Rocking		-	-	-	-	-	-	-	-	-	-	-	-
Seat, Building Frame		4	4	4	4	4	4	4	4	4	4	4	4
Support Assy, Adjustable		4	4	4	4	4	4	4	4	4	4	4	4
Support Assy, Fixed		-	-	-	-	-	-	-	-	-	-	-	-
Support, Jack		2	2	2	2	2	2	2	2	2	2	2	2
Sling, Steel, Wire Rope		1	1	1	1	1	1	1	1	1	1	1	1
Wrench, Ratchet		-	-	-	-	-	-	-	-	-	-	-	-

2-11. BASKET LOADS PER BRIDGE.

a. The quantity of components per basket and quantity of baskets per bridge are found in this paragraph.

b. These basket loads are for the quantities given in Tables 2-15, 2-16, and 2-17, and do not conform to any particular pallet load.

c. All baskets are to be carried by four personnel.

d. Jacks will not be placed in baskets. Jacks will be placed upright in launching nose heavy sections and tied or strapped to center vertical, or tied into load in a vertical position to prevent loss of hydraulic fluid.

SINGLE STORY BASKET LOADS

	4 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of Baskets by Type						
	1	1	1	1			
Bag, Equipment	1						
Bar, Carrying	8						
Clip, Retainer (in bag)	14						
Handle, Jack			2				
Handle, Carrying	8						
*Pin Assy, Anchorage				4			
Pin, Bracing							
Pin, Nose	4						
Pin, Panel		7	3				
Pin, Panel, Headless							

	5 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of Baskets by Type						
	1	1	1	1			
Bag, Equipment	1						
Bar, Carrying	8						
Clip, Retainer (in bag)	16						
Handle, Jack			2				
Handle, Carrying	8						
*Pin Assy, Anchorage				4			
Pin, Bracing							
Pin, Nose	4						
Pin, Panel		7	5				
Pin, Panel, Headless							

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	6 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of baskets by type						
	1	1	2	1			
Bag, Equipment	1						
Bar, Carrying	8	8					
Clip, Retainer (in bag)	18						
Handle, Jack		2					
Handle, Carrying	8	8					
*Pin Assy, Anchorage				4			
Pin, Bracing							
Pin, Nose	4						
Pin, Panel			7				
Pin, Panel, Headless							

	7 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of Baskets by Type						
	1	1	1	2	1		
Bag, Equipment	1						
Bar, Carrying	8	8					
Clip, Retainer (in bag)	20						
Handle, Jack		2					
Handle, Carrying	8	8					
*Pin Assy, Anchorage					4		
Pin, Bracing							
Pin, Nose	4						
Pin, Panel			6	5			
Pin, Panel, Headless							

	8 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of Baskets by Type						
	1	1	2	1	1		
Bag, Equipment	1						
Bar, Carrying	8	8					
Clip, Retainer (in bag)	22						
Handle, Jack		2					
Handle, Carrying	8	8					
*Pin Assy, Anchorage					4		
Pin, Bracing							
Pin, Nose	4						
Pin, Panel			7	6			
Pin, Panel, Headless							

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	9 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of Baskets by Type						
	1	1	2	1	1		
Bag, Equipment	1						
Bar, Carrying	8	8					
Clip, Retainer (in bag)	32						
Handle, Jack		2					
Handle, Carrying	8	8					
*Pin Assy, Anchorage					4		
Pin, Bracing		2					
Pin, Nose	4	5					
Pin, Panel			7	2			
Pin, Panel, Headless				4			

	10 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of Baskets by Type						
	1	1	3	1			
Bag, Equipment	1						
Bar, Carrying	8	8					
Clip, Retainer (in bag)	34						
Handle, Jack		2					
Handle, Carrying	8	8					
*Pin Assy, Anchorage					4		
Pin, Bracing		2					
Pin, Nose	4	5					
Pin, Panel			6				
Pin, Panel, Headless				4			

	11 Bay Single Story Basket Type						
	A	B	C	D	E	F	G
	Number of Baskets by Type						
	1	1	3	1	1		
Bag, Equipment	1						
Bar, Carrying	8	8					
Clip, Retainer (in bag)	37						
Handle, Jack		2					
Handle, Carrying	8	8					
*Pin Assy, Anchorage					4		
Pin, Bracing		2					
Pin, Nose	5	5					
Pin, Panel			6	2			
Pin, Panel, Headless				4			

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	12 Bay Single Story Basket Type							
	A	B	C	D	E	F	G	
	Number of Baskets by Type							
	1	1	3	1	1			
Bag, Equipment	1							
Bar, Carrying	8	8						
Clip, Retainer (in bag)	39							
Handle, Carrying	8	8						
Handle, Jack		2						
*Pin Assy, Anchorage					4			
Pin, Bracing		2						
Pin, Nose	5	5						
Pin, Panel			7	1				
Pin, Panel, Headless				4				

DOUBLE STORY BASKET LOADS

NOTE

All double story basket loads (except 2E + 12 bay) have quantity of components required (no spares). The 2E + 12 bay basket loads contain some spares. In all cases, the quantities given will be enough to complete the mission.

	2E + 1 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	3	1	1	
Bag, Equipment	1							
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	47							
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		11						
Pin, Nose	5							
Pin, Panel				5	7	4		
Pin, Panel, Headless								
Seat, Building Frame								

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 2 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	3	1	1	
Bag, Equipment	1							
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	52							
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		13						
Pin, Nose	6							
Pin, Panel				5	7	4		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 3 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	4	1	1	
Bag, Equipment	1							
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	56							
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		15						
Pin, Nose	6							
Pin, Panel				5	6	5		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 4 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	1	4	1	
Bag, Equipment	1							
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	60							
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		17						
Pin, Nose	6							
Pin, Panel				5	5	7		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 5 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	5	1	1	
Bag, Equipment	1							
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	65							
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		19						
Pin, Nose	7							
Pin, Panel				5	6	7		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 6 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	1	5	1	
Bag Equipment	1							
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	69							
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		21						
Pin, Nose	7							
Pin, Panel				5	6	7		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 7 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	4	3	1	
Bag, Equipment	1							
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	73							
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		23						
Pin, Nose	7							
Pin, Panel				5	6	7		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 8 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	7	1		
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	50	28						
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage						8		
Pin, Bracing		25						
Pin, Nose	8							
Pin, Panel				5	7			
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 9 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	5	3	1	
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	50	33						
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		28						
Pin, Nose	8							
Pin, Panel				5	7	6		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 10 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	3	6	1	
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	50	37						
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		30						
Pin, Nose	8							
Pin, Panel				5	7	6		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 11 Bay Double Story Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	7	2	1	
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	50	42						
Handle, Carrying	8	8	8					
Handle, Jack	5							
*Pin Assy, Anchorage							8	
Pin, Bracing		32						
Pin, Nose	9							
Pin, Panel				5	7	6		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 12 Bay Double Story Basket Type**									
	A	B	C	D	E	F	G	H	I	J
	Number of Baskets by Type									
	1	1	1	1	1	5	1	1	4	1
Bag, Equipment	1				1		1		1	
Bar, Carrying		6	6	12						
Clip, Retainer (in bag)	30				14		22		14	
Handle, Carrying	24									
Handle, Jack	5									
*Pin Assy, Anchorage										8
Pin, Bracing		6			4		4		6	
Pin, Nose			9							
Pin, Panel				2	6	7	6	7	6	
Pin, Panel, Headless				2				4		
Seat, Building Frame	4									

	2E + 13 Bay Double Story*** Basket Type**								
	A	B	C	D	E	F	G	H	
	Number of Baskets by Type								
	1	1	1	2	4	5	2	1	
Bag, Equipment	1	1							
Bar, Carrying	8	8	8						
Clip, Retainer (in bag)	50	50							
Handle, Carrying	8	8	8						
Handle, Jack	7								
*Pin Assy, Anchorage								8	
Pin, Bracing		18	18						
Pin, Nose	9								
Pin, Panel				5	6	7	5		
Pin, Panel, Headless				2					
Seat, Building Frame				2					

* If required.
** Basket load configurations when depot stocked.
*** Used with Chapter 5.

2-11. BASKET LOAD PER BRIDGE (Cont).

	2E + 14 Bay Double Story*** Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	9	2	1	
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	55	50						
Handle, Carrying	8	8	8					
Handle, Jack	7							
*Pin Assy, Anchorage							8	
Pin, Bracing		19	19					
Pin, Nose	10							
Pin, Panel				5	7	5		
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 15 Bay Double Story*** Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	3	7	2	1
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	59	50						
Handle, Carrying	8	8	8					
Handle, Jack	7							
*Pin Assy, Anchorage								8
Pin, Bracing		20	20					
Pin, Nose	10							
Pin, Panel				5	6	7	5	
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.
*** Used with Chapter 5.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 16 Bay Double Story*** Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	6	5	2	1
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)								
Handle, Carrying	8	8	8					
Handle, Jack	7							
*Pin Assy, Anchorage								8
Pin, Bracing		21	21					
Pin, Nose		10						
Pin, Panel				5	6	7	5	
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 17 Bay Double Story*** Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	2	9	2	
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	68	50						
Handle, Carrying	8	8	8					
Handle, Jack	7							
*Pin Assy, Anchorage								8
Pin, Bracing		22	22					
Pin, Nose	11							
Pin, Panel				5	6	7	5	
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

*** Used with Chapter 5.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 18 Bay Double Story*** Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	5	7	2	1
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	72	50						
Handle, Carrying	8	8	8					
Handle, Jack	7							
*Pin Assy, Anchorage								8
Pin, Bracing		23	23					
Pin, Nose	11							
Pin, Panel				5	6	7	5	
Pin, Panel, Headless				2				
Seat, Building Frame				2				

	2E + 19 Bay Double Story*** Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by Type							
	1	1	1	2	1	11	2	1
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	75	64						
Handle, Carrying	8	8	8					
Handle, Jack	7							
*Pin Assy, Anchorage								8
Pin, Bracing		24	24					
Pin, Nose	18							
Pin, Panel				5	6	7		5
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

*** Used with Chapter 5.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 20 Bay Double Story*** Basket Type								
	A	B	C	D	E	F	G	H	I
	Number of Baskets by type								
	1	1	1	2	4	9	1	2	1
Bag, Equipment	1	1							
Bar, Carrying	8	8	8						
Clip, Retainer (in bag)	75	68							
Handle, Carrying	8	8	8						
Handle, Jack	7								
*Pin Assy, Anchorage									8
Pin, Bracing		25	25						
Pin, Nose	18								
Pin, Panel				5	6	7		5	
Pin, Panel, Headless				2					
Seat, Building Frame				2					

	2E + 21 Bay Double Story*** Basket Type								
	A	B	C	D	E	F	G	H	
	Number of Baskets by type								
	1	1	1	2	13	1	2	1	
Bag, Equipment	1	1							
Bar, Carrying	8	8	8						
Clip, Retainer (in bag)	75	72							
Handle, Carrying	8	8	8						
Handle, Jack	7								
*Pin Assy, Anchorage								8	
Pin, Bracing		26	26						
Pin, Nose	18								
Pin, Panel				5	7		5		
Pin, Panel, Headless				2					
Seat, Building Frame				2					

* If required.

*** Used with Chapter 5.

2-11. BASKET LOADS PER BRIDGE (Cont).

	2E + 22 Bay Double Story*** Basket Type							
	A	B	C	D	E	F	G	H
	Number of Baskets by type							
	1	1	1	2	3	11	2	1
Bag, Equipment	1	1						
Bar, Carrying	8	8	8					
Clip, Retainer (in bag)	76	75						
Handle, Carrying	8	8	8					
Handle, Jack	7							
*Pin Assy, Anchorage								8
Pin, Bracing		27	27					
Pin, Nose	18							
Pin, Panel				5	6	7	5	
Pin, Panel, Headless				2				
Seat, Building Frame				2				

* If required.

*** Used with Chapter 5.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION.

a. This paragraph gives the procedures for the loading of bridge and erection components on pallets.

b. The quantity of components per pallet for each bridge length is given at the beginning of each bridge configuration paragraph, and followed by step by step procedures for loading the basic type of load.

c. Single Story Pallet Loads

(1) Single story pallet loads are basic variations of four different types. These types are:

(a) ES - Erection Single
SRDC - Short Ramp/Deck/Curb
SSE - Single Story End
SSC - Single Story Center

(2) ES pallets contain all the erection and launch components. In addition, some bridge components are on these ES loads.

(3) SRDC pallets contain all the ramps, curbs and most of the deck units needed for each bridge.

(4) SSE pallets contain top panels, bankseat beams and guide markers.

(5) SSC pallets contain top panel and deck units for center bays of bridge.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

	4 Bay SS		5 Bay SS		6 Bay SS		
Components Required	Pallet No. 1 SRDC 4	Pallet No. ES 4	Pallet No. 1 SRDC 5	Pallet No. 2 ES 5	Pallet No. 1 SRDC 6	Pallet No. 2 ES 6	Pallet No. 3 SSE 6
Adapter, Push Bar	-	-	-	-	-	-	-
Bar Assy, Launch (short)	-	-	-	-	-	-	-
Beam Assy, Roller	-	1	-	1	-	1	-
Beam, Bankseat	-	2	-	2	-	-	2
Bracket Assy, Lifting	-	2	-	2	-	2	-
Cable, Extractor	-	1	-	1	-	1	-
Curb	8	-	10	-	12	-	-
Deck	16	-	20	-	20	-	4
Girder, Launching Nose	-	-	-	-	-	-	-
Girder, Push Bar	-	-	-	-	-	-	-
Guide Marker	-	6	-	8	-	-	8
Nose Assy, Launching	-	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

	4 Bay SS		5 Bay SS		6 Bay SS		
Components Required	Pallet No. 1 SRDC 4	Pallet No. ES 4	Pallet No. 1 SRDC 5	Pallet No. 2 ES 5	Pallet No. 1 SRDC 6	Pallet No. 2 ES 6	Pallet No. 3 SSE 6
Nose, Light, Front	-	1	-	1	-	1	-
Nose, Light, Rear	-	1	-	1	-	1	-
Panel, Top	-	8	-	10	-	4	8
Pedestal Assy, Adj.	-	-	-	-	-	-	-
Pedestal, Building	-	2	-	2	-	2	-
Plate, Base, SS	-	2	-	2	-	2	-
Post Assy, Jack	-	2	-	2	-	2	-
Post, Launching Nose	-	-	-	-	-	-	-
Ramp, Short	14	-	14	-	14	-	-
Roller, Landing	-	1	-	1	-	1	-
Roller, Launching Nose	-	-	-	-	-	-	-
Support Assy, Fixed	-	2	-	2	-	2	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

	7 Bay SS			8 Bay SS			
Components Required	Pallet No. 1 SRDC 6	Pallet No. 2 ES 7/8	Pallet No. 3 SSE	Pallet No. 1 SRDC 6	Pallet No. 2 ES 7/8	Pallet No. 3 SSE	Pallet No. 4 SSC 8
Adapter, Push Bar	-	-	-	-	-	-	-
Bar, Assy, Launch (Short)	-	-	-	-	-	-	-
Beam Assy, Roller	-	1	-	-	1	-	-
Beam, Bankseat	-	-	2	-	-	2	-
Bracket Assy, Lifting	-	2	-	-	2	-	-
Cable, Extractor	-	1	-	-	1	-	-
Curb	14	-	-	14	-	-	-
Deck	20	-	8	20	-	8	4
Girder, Launching Nose	-	-	-	-	-	-	-
Girder, Push Bar	-	-	-	-	-	-	-
Guide Marker	-	-	10	-	-	10	-
Nose Assy, Launching	-	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

	7 Bay SS			8 Bay SS			
Components Required	Pallet No. 1 SRDC 6	Pallet No. 2 ES 7/8	Pallet No. 3 SSE	Pallet No. 1 SRDC 6	Pallet No. 2 ES 7/8	Pallet No. 3 SSE	Pallet No. 4 SSC 8
Nose, Light, Front	-	1	-	-	1	-	-
Nose, Light, Rear	-	1	-	-	1	-	-
Panel, Top	-	8	8	-	8	8	4
Pedestal Assy, Adj.	-	-	-	-	-	-	-
Pedestal, Building	-	2	-	-	2	-	-
Plate, Base, SS	-	2	-	-	2	-	-
Post Assy, Jack	-	2	-	-	2	-	-
Post, Launching Nose	-	-	-	-	-	-	-
Ramp, Short	14	-	-	14	-	-	-
Roller, Landing	-	1	-	-	1	-	-
Roller, Launching Nose	-	-	-	-	-	-	-
Support Assy, Fixed	-	2	-	-	2	-	-

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2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont)

	9 Bay SS				10 Bay SS				
Components Required	Pallet No. 1 SRDC 9	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 9	Pallet No. 1 SRDC 10	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 10	Pallet No. 5 SSC 8
Adapter, Push Bar	-	1	-	-	-	1	-	-	-
Bar, Assy, Launch (Short)	-	1	-	-	-	1	-	-	-
Beam Assy, Roller	-	1	-	-	-	1	-	-	-
Beam, Bankseat	-	-	2	-	-	-	2	-	-
Bracket Assy, Lifting	-	2	-	-	-	2	-	-	-
Cable, Extractor	-	1	-	-	-	1	-	-	-
Curb	18	-	-	-	20	-	-	-	-
Deck	20	-	8	8	20	-	8	8	4
Girder, Launching Nose	-	1	-	-	-	1	-	-	-
Girder, Push Bar	-	1	-	-	-	1	-	-	-
Guide Marker	-	-	12	-	-	-	12	-	-
Nose Assy, Launching	-	6	-	-	-	6	-	-	-
Nose, Light, Front	-	1	-	-	-	1	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont)

	9 Bay SS				10 Bay SS				
Components Required	Pallet No. 1 SRDC 9	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 9	Pallet No. 1 SRDC 10	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 10	Pallet No. 5 SSC 8
Nose, Light, Rear	-	1	-	-	-	1	-	-	-
Panel, Top	-	-	8	10	-	-	8	8	4
Pedestal Assy, Adj.	-	1	-	-	-	1	-	-	-
Pedestal, Building	-	2	-	-	-	2	-	-	-
Plate, Base, SS	-	4	-	-	-	4	-	-	-
Post Assy, Jack	-	2	-	-	-	2	-	-	-
Post, Launching Nose	-	2	-	-	-	2	-	-	-
Ramp, Short	14	-	-	-	14	-	-	-	-
Roller, Landing	-	1	-	-	-	1	-	-	-
Roller, Launching Nose	-	1	-	-	-	1	-	-	-
Support Assy, Fixed	-	2	-	-	-	2	-	-	-
Support, Jack	-	2	-	-	-	2	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont)

	11 Bay SS					12 Bay SS				
Components Required	Pallet No. 1 SRDC 11	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 10	Pallet No. 5 SSC 11	Pallet No. 1 SRDC 12	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 12	Pallet No. 5 SSC 10
Adapter, Push Bar	-	1	-	-	-	-	1	-	-	-
Bar Assy, Launch (short)	-	1	-	-	-	-	1	-	-	-
Beam Assy, Roller	-	1	-	-	-	-	1	-	-	-
Beam, Bankseat	-	-	2	-	-	-	-	2	-	-
Bracket Assy, Lifting	-	2	-	-	-	-	2	-	-	-
Cable, Extractor	-	1	-	-	-	-	1	-	-	-
Curb	22	-	-	-	-	24	-	-	-	-
Deck	20	-	8	8	8	20	-	8	12	8
Girder, Launching Nose	-	1	-	-	-	-	1	-	-	-
Girder, Push Bar	-	1	-	-	-	-	1	-	-	-
Guide, Marker	-	-	12	-	-	-	-	12	-	-
Nose Assy, Launching	-	6	-	-	-	-	6	-	-	-
Nose, Light, Front	-	1	-	-	-	-	1	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont)

	11 Bay SS					12 Bay SS				
Components Required	Pallet No. 1 SRDC 11	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 10	Pallet No. 5 SSC 11	Pallet No. 1 SRDC 12	Pallet No. 2 ES 11/12	Pallet No. 3 SSE	Pallet No. 4 SSC 12	Pallet No. 5 SSC 10
Nose, Light, Rear	-	1	-	-	-	-	1	-	-	-
Panel, Top	-	-	8	8	6	-	-	8	8	8
Pedestal Assy, Adj.	-	1	-	-	-	-	1	-	-	-
Pedestal, Building	-	2	-	-	-	-	2	-	-	-
Plate, Base, SS	-	4	-	-	-	-	4	-	-	-
Post Assy, Jack	-	2	-	-	-	-	2	-	-	-
Post, Launching Nose	-	2	-	-	-	-	2	-	-	-
Ramp, Short	14	-	-	-	-	14	-	-	-	-
Roller, Landing	-	1	-	-	-	-	1	-	-	-
Roller, Launching Nose	-	1	-	-	-	-	1	-	-	-
Support Assy, Fixed	-	2	-	-	-	-	2	-	-	-
Support, Jack	-	2	-	-	-	-	2	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont)

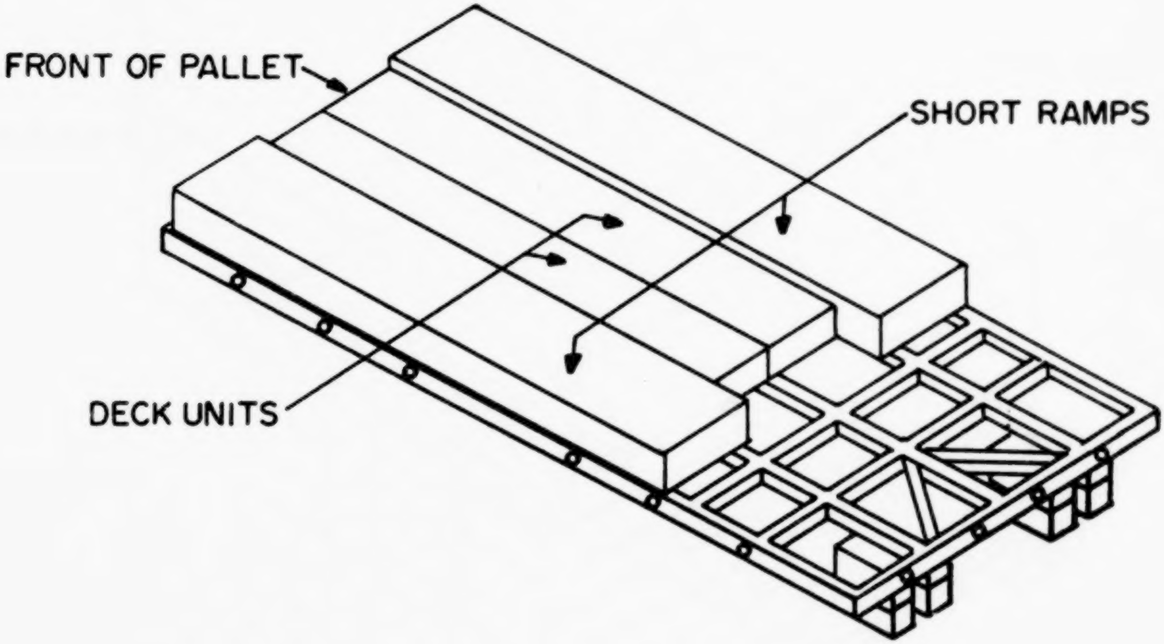
(6) Loading Parts on Pallets

(a) Pallet Load SRDC 4 through 12.

Step 1. Place 2 deck units and 2 short ramps on front of pallet.

a. Front of deck units and ramps are placed flush with the front of pallet.

b. Side of ramps are placed flush with the edge of the pallet.



For SRDC 4 PROCEED TO STEP 2.

For SRDC 5 thru 12 PROCEED TO STEP 5.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

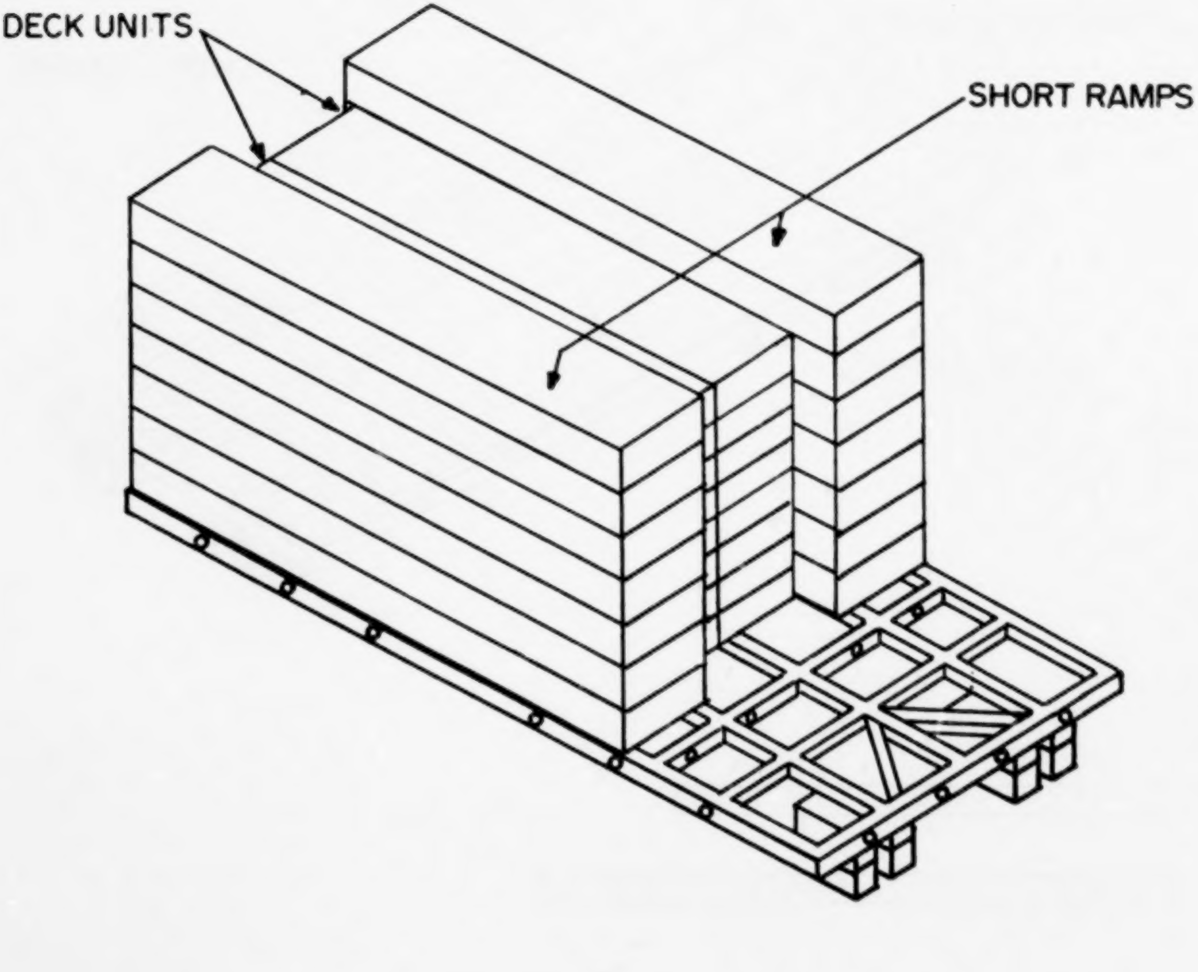
c. Single Story Pallet Loads (Cont).

(6) (a) Pallet Load SRDC 4.

Step 2. Stack 7 deck units and 6 short ramps on top of the deck units and ramps placed on pallet in Step 1.

WARNING

Ensure that the deck units and ramps are stacked as neatly as possible using the stacking lugs and recesses for correct alignment. Improper stacking may result in injury to personnel or damage to components.

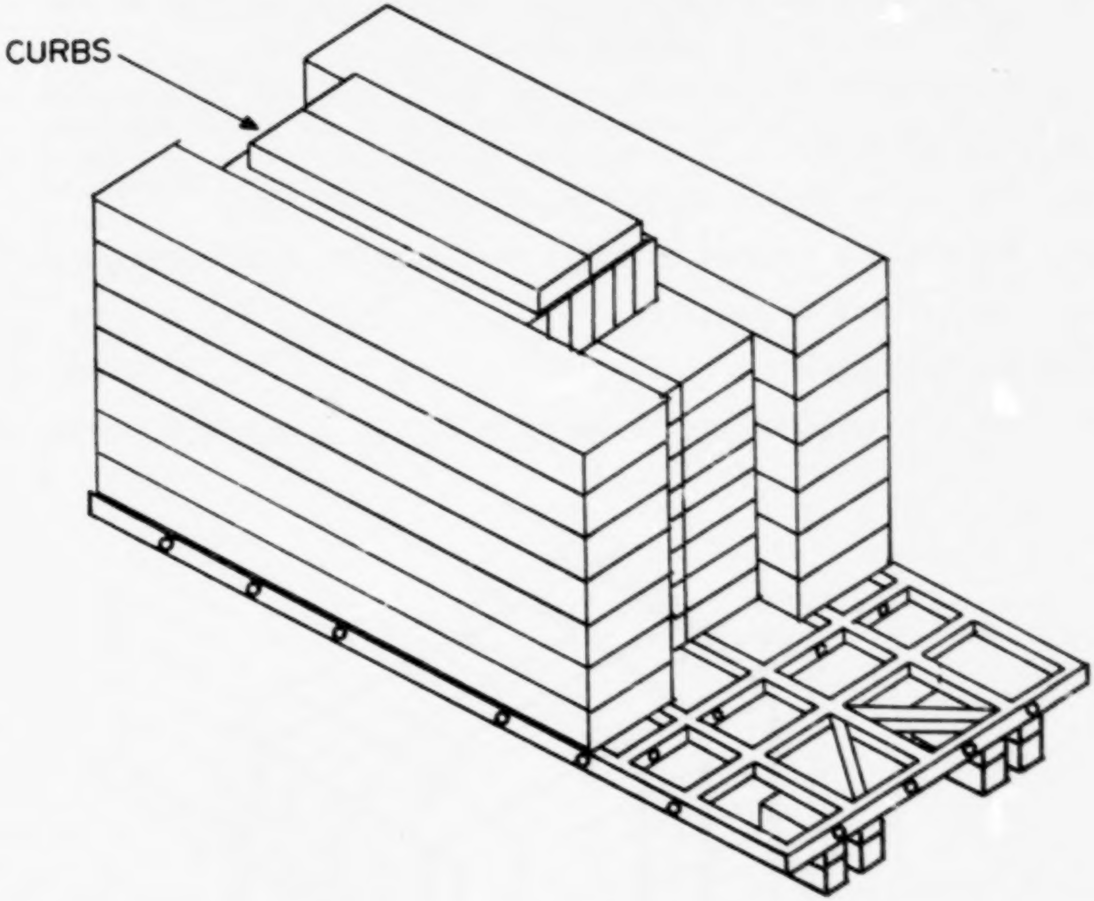


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (a) Pallet Load SRDC 4.

Step 3. Place 8 curbs on top of the deck units.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (a) Pallet Load SRDC 4.

Step 4. Secure load with nine 10,000 lb. cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

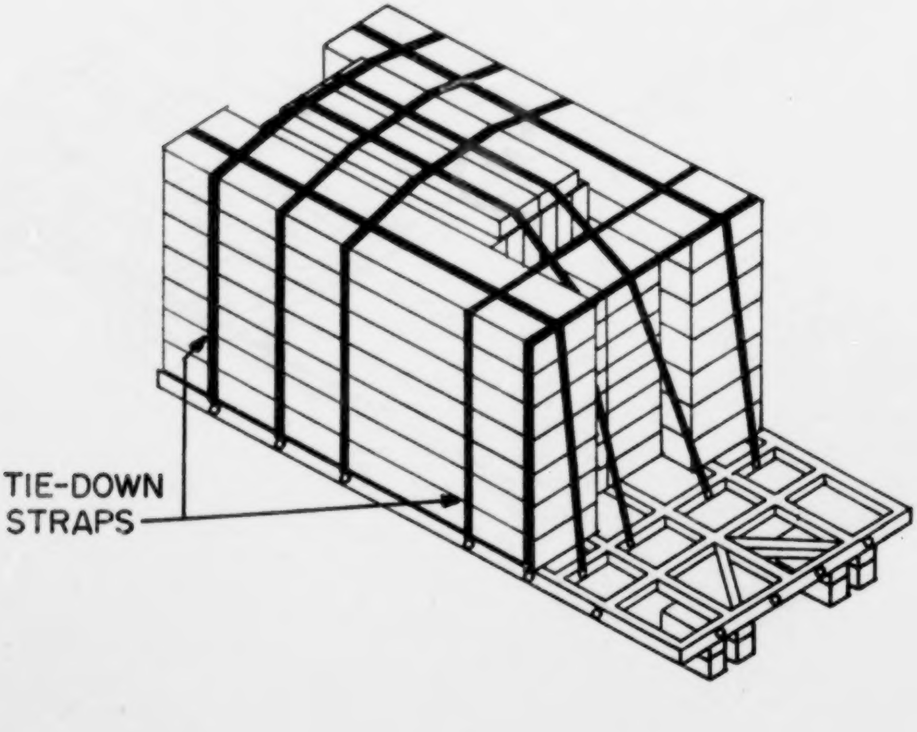
e. Place five straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

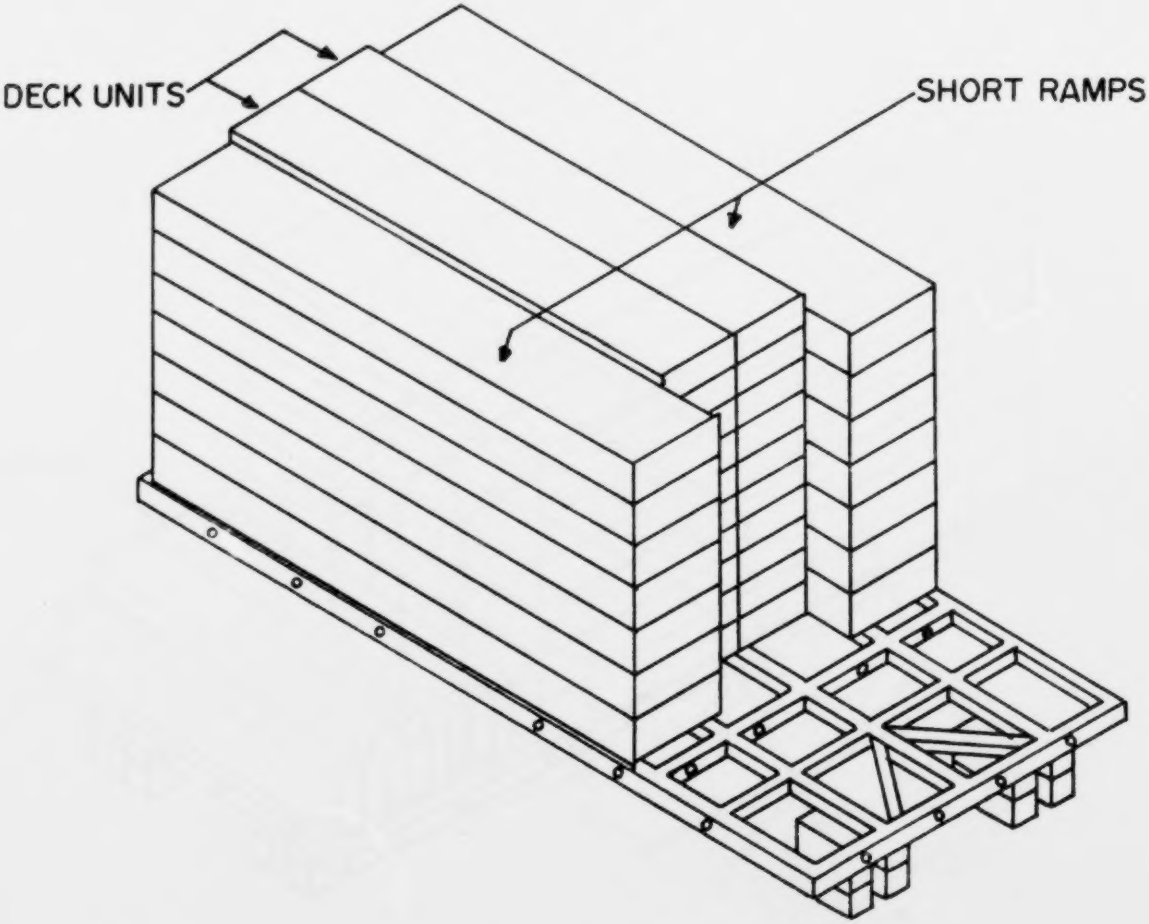
c. Single Story Pallet Loads (Cont).

(6) (a) Pallet Load SRDC 5 thru 12.

Step 5. Stack 9 deck units and 6 short ramps on top of deck units and ramps placed on pallet in Step 1.

WARNING

Ensure that the deck units and ramps are stacked as neatly as possible using the stacking lugs and recesses for correct alignment. Improper stacking may result in injury to personnel or damage to components.



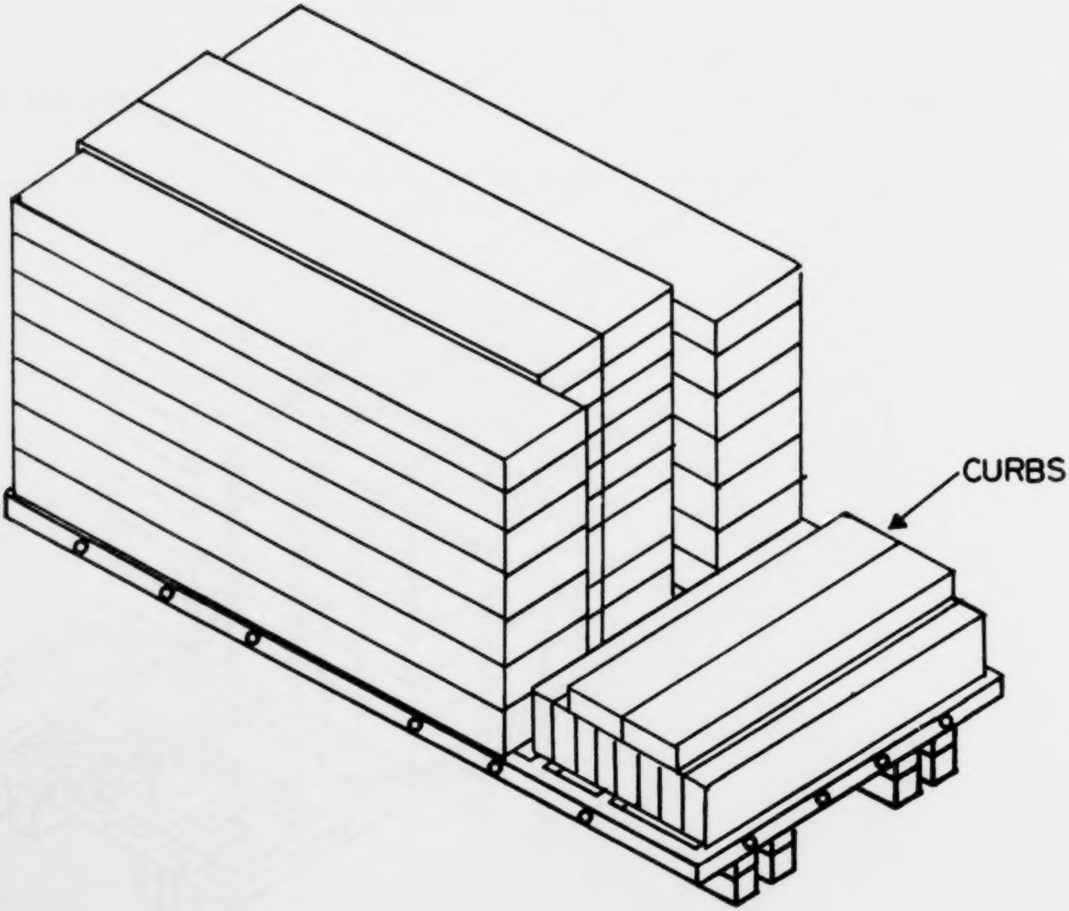
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (a) Pallet Load SRDC 5 thru 12.

Step 6. Place required number of curbs across rear of pallet as illustrated. See below for various configurations.

5 bay	10 curbs
6 bay	12 curbs
7 bay	14 curbs
8 bay	16 curbs
9 bay	18 curbs
10 bay	20 curbs
11 bay	22 curbs
12 bay	24 curbs



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (a) Pallet Load SRDC 5 thru 12.

Step 7. Secure load with ten 10,000 lb. cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

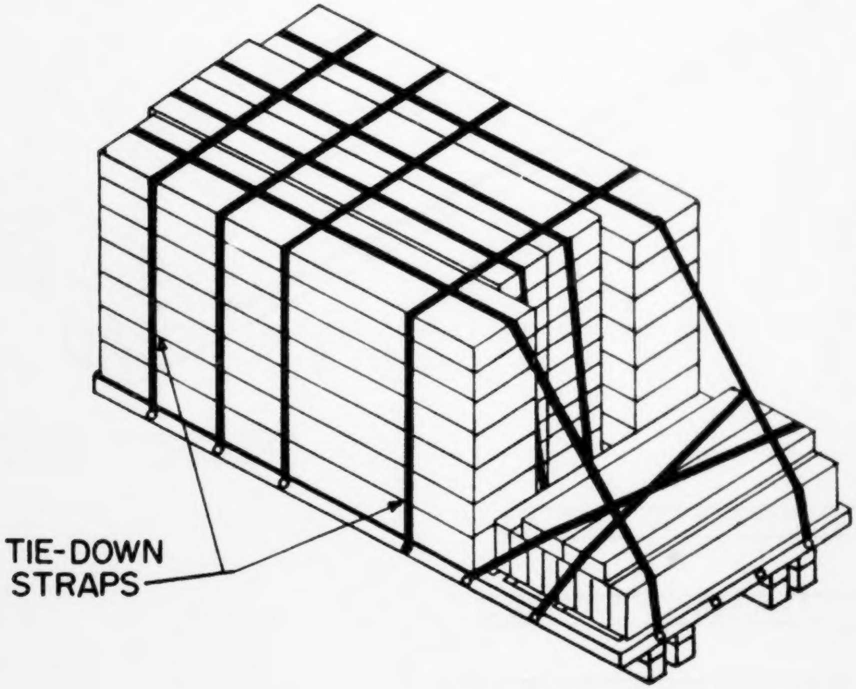
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

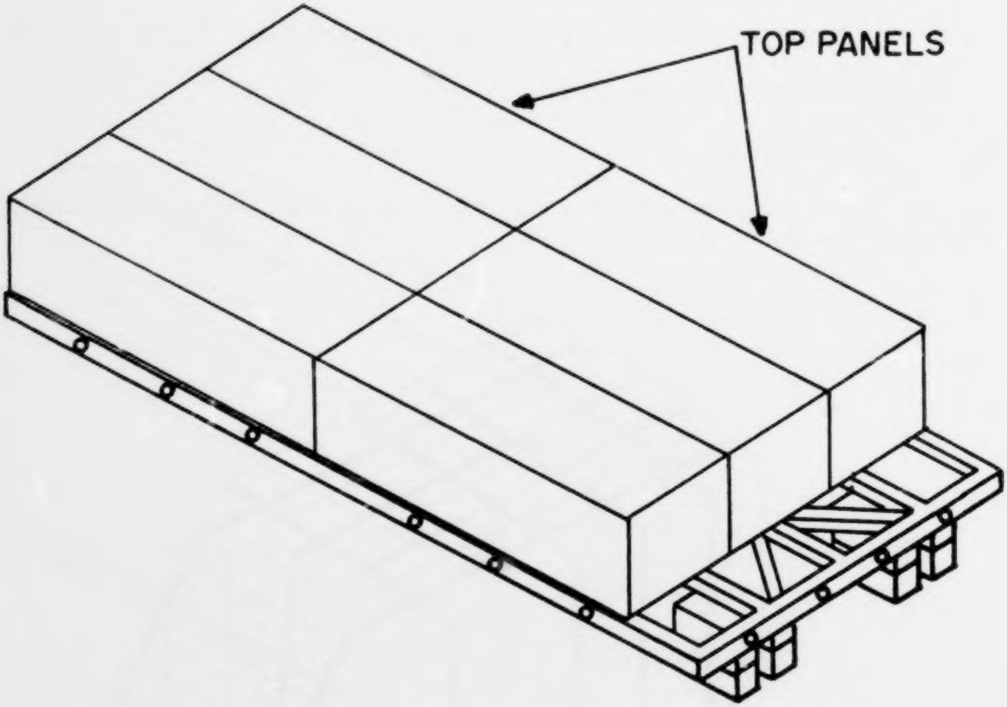
c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 4 thru 7/8.

For ES 4, 5 and 7/8 PROCEED TO STEP 1.

For ES 6 PROCEED TO STEP 2.

Step 1. Place 6 top panels on pallet as shown. Ensure that shoot bolts are placed in locked position after panels are butted together.



For ES 4 PROCEED TO STEP 4.

For ES 5 PROCEED TO STEP 10.

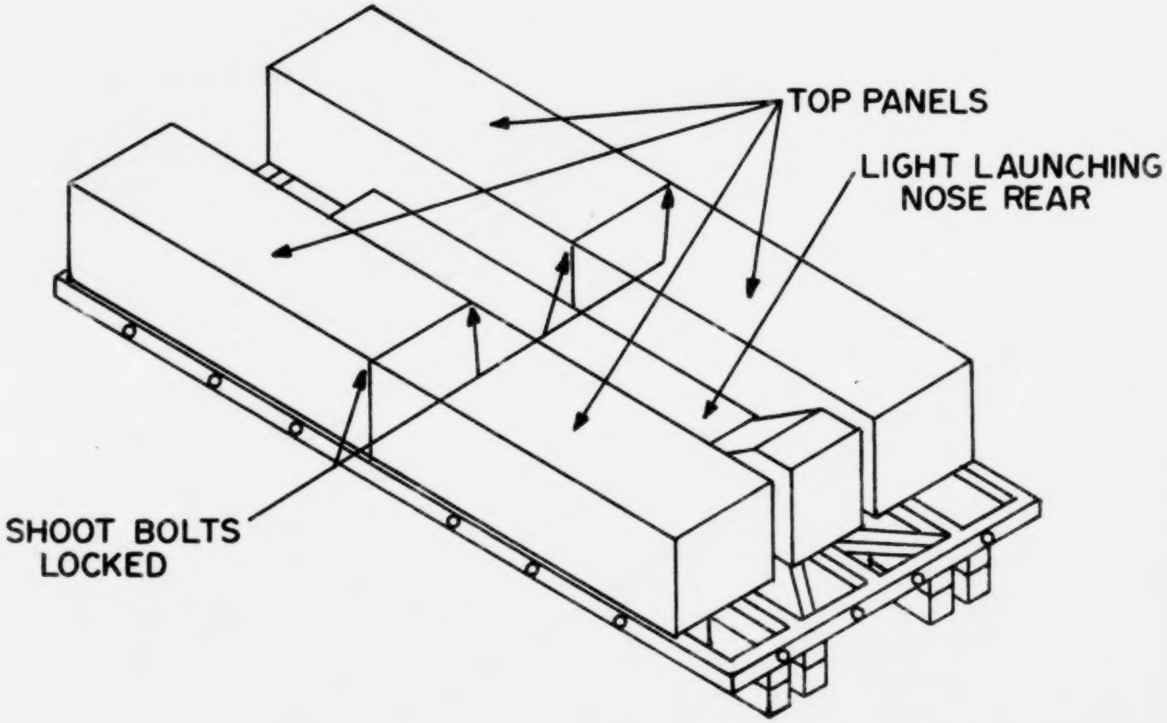
For ES 7/8 PROCEED TO STEP 21.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 6.

Step 2. Place 4 top panels on the pallet as shown. Ensure that shoot bolts are placed in locked position after panels are butted together.



Step 3. Place the light launching nose rear section in the space between the top panels.

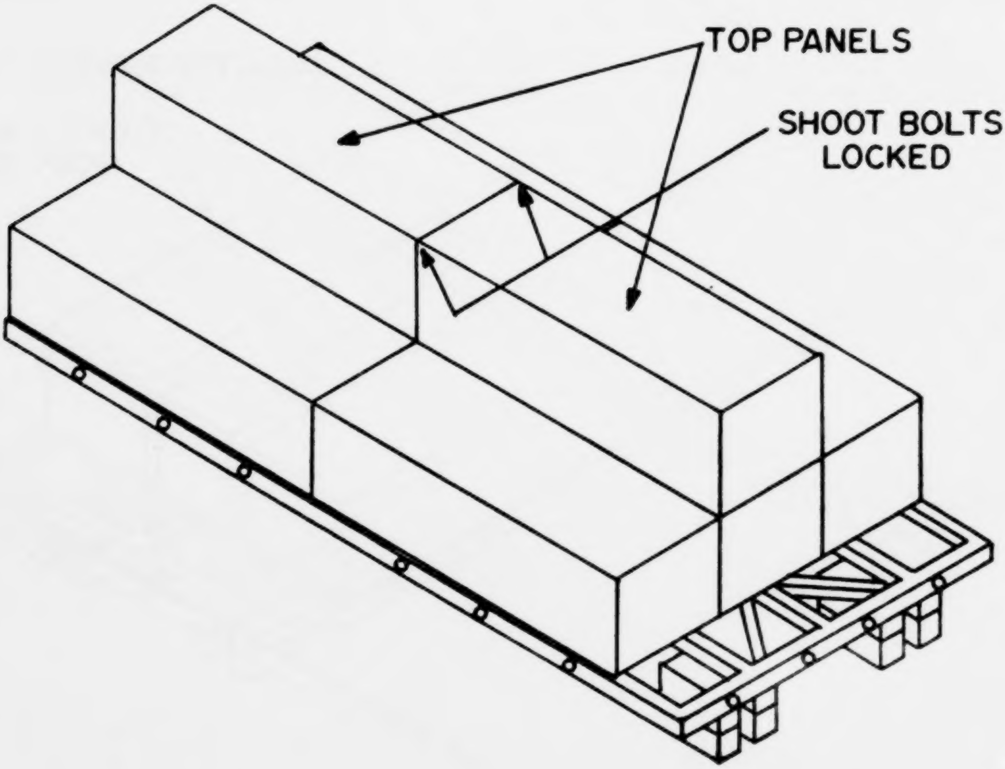
For ES 6 PROCEED TO STEP 16.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 6.

Step 4. Place 2 top panels on top of center 2 panels put on in Step 1. Ensure that the shoot bolts are placed in locked position.

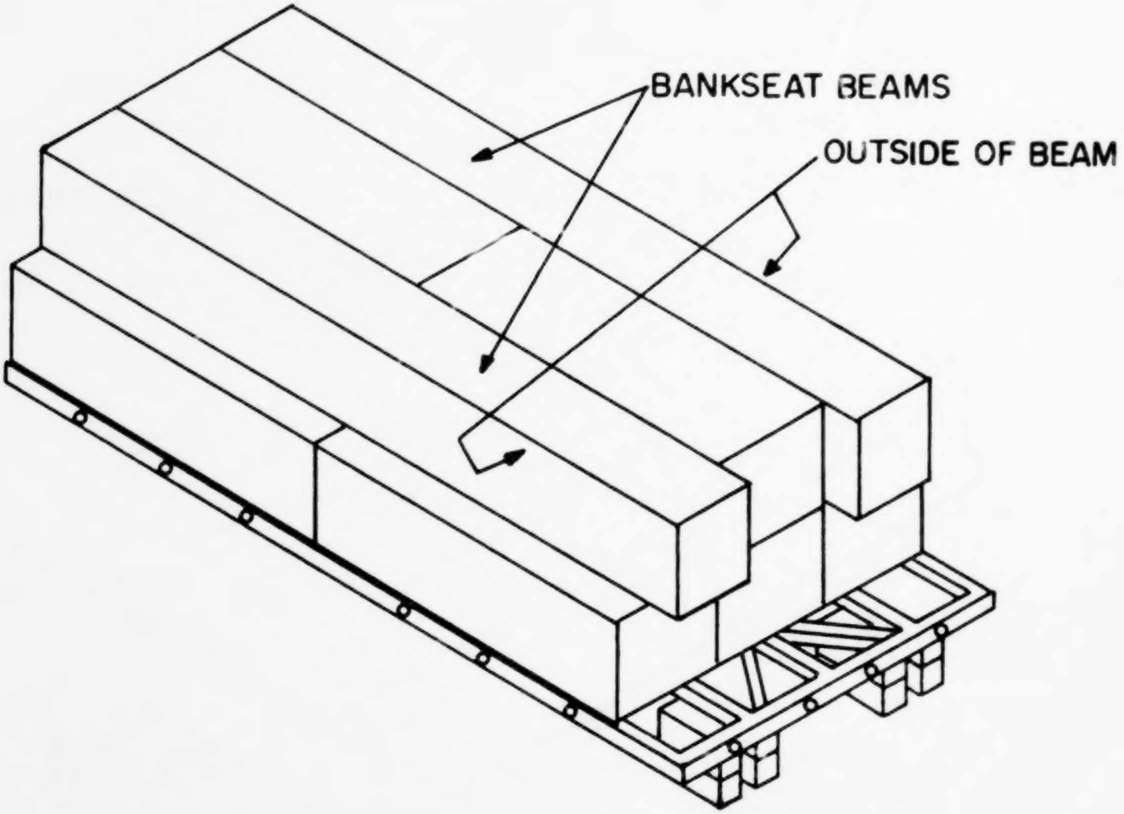


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 4.

Step 5. Place 1 bankseat beam on each side of the center top panels loaded in Step 4. Ensure that the outside of the beam faces the outside of the load.



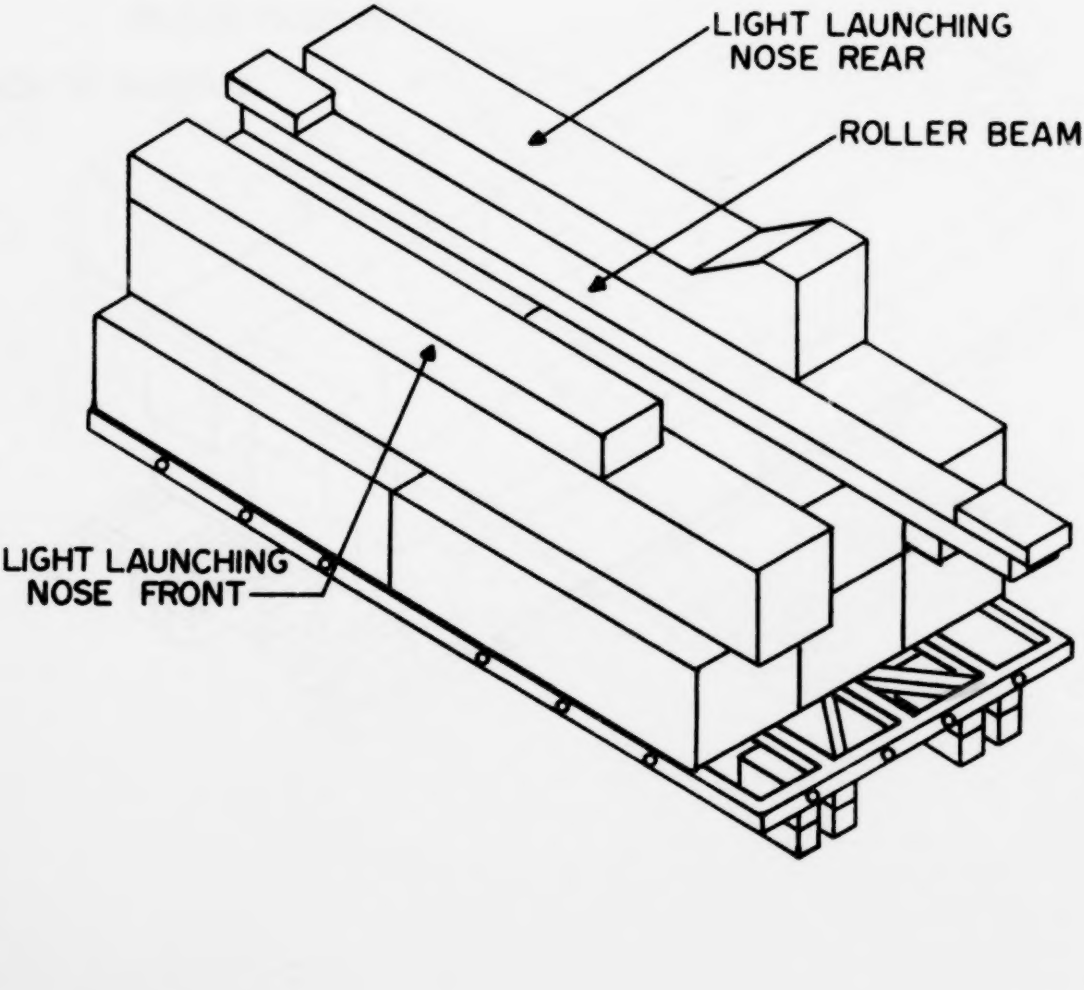
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 4.

Step 6. Place the following components on top of the load:

1 Light launching nose rear
1 Light launching nose front
1 Roller beam



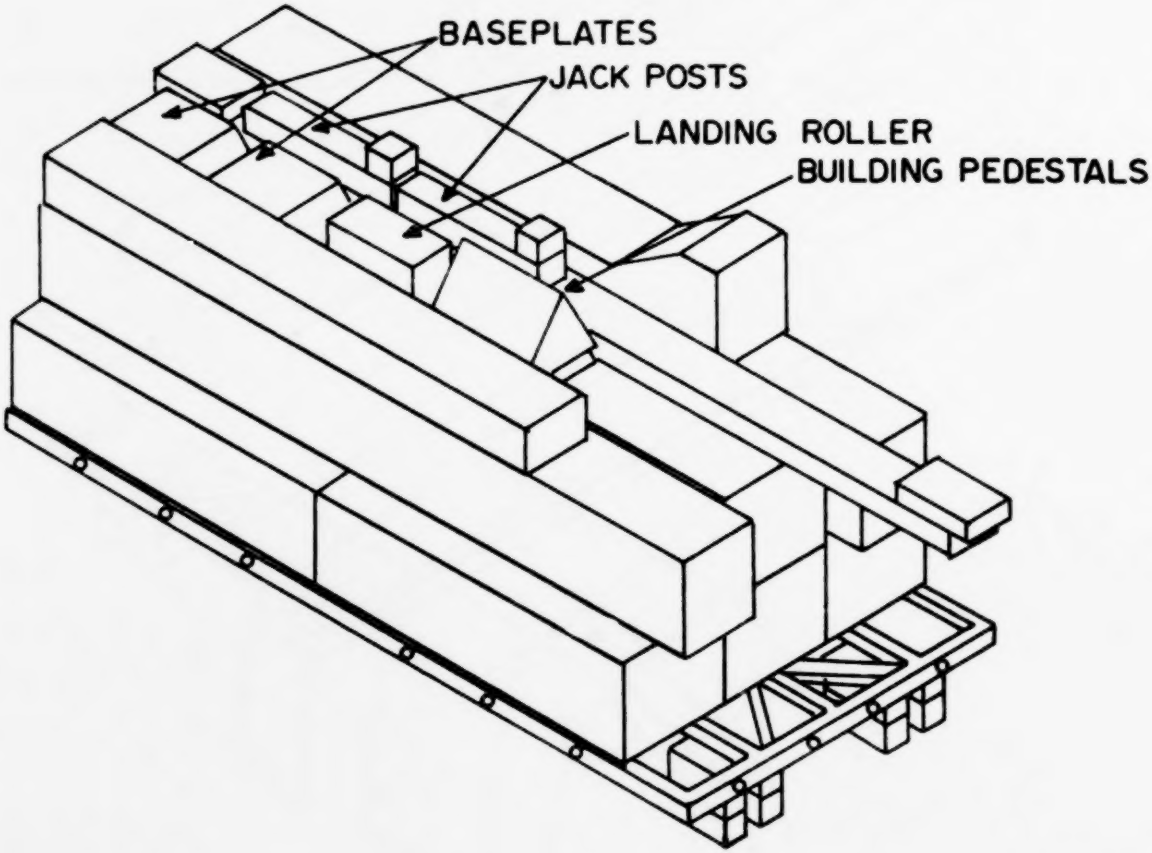
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 4.

Step 7. Place the following components on top of the load:

2 Baseplates
2 Building pedestals
1 Landing roller
2 Jack posts
2 Fixed supports (not shown)

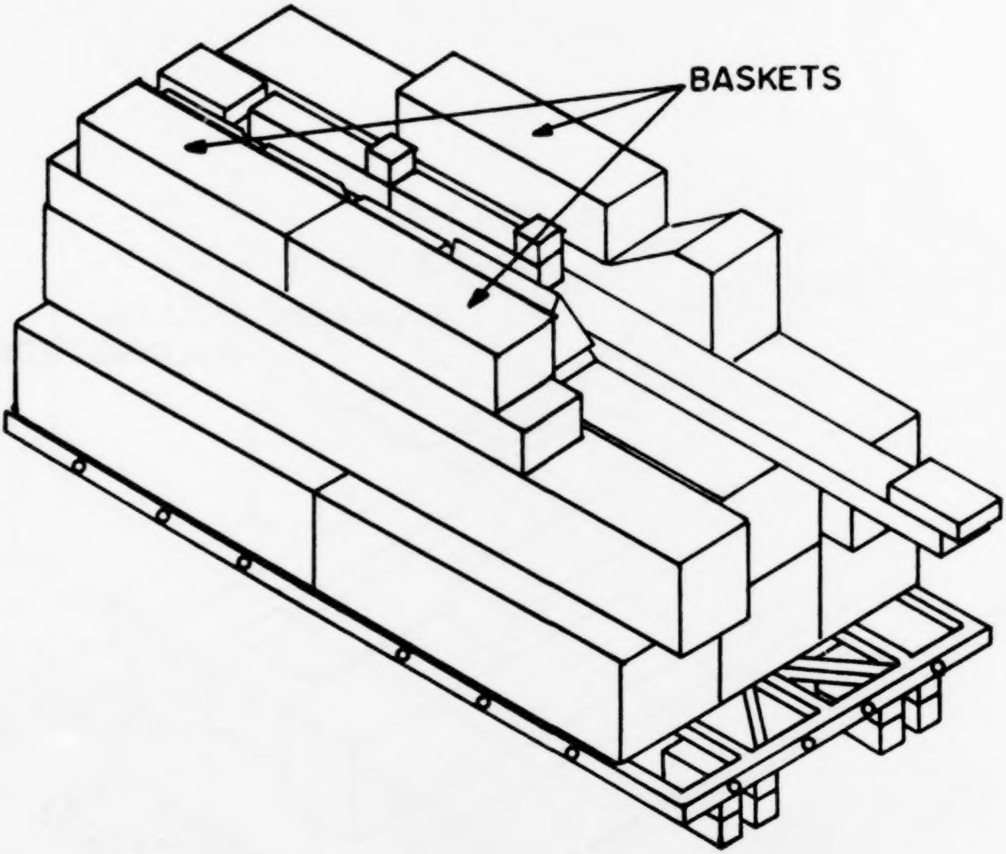


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 4.

Step 8. Place 3 baskets on top of the nose sections.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 4.

Step 9. Secure load with ten 10,000 lb. cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

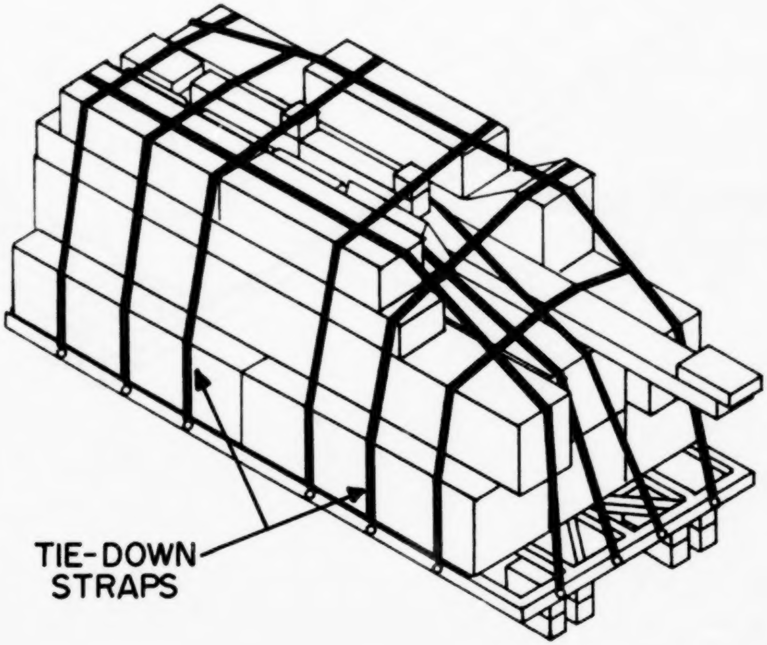
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



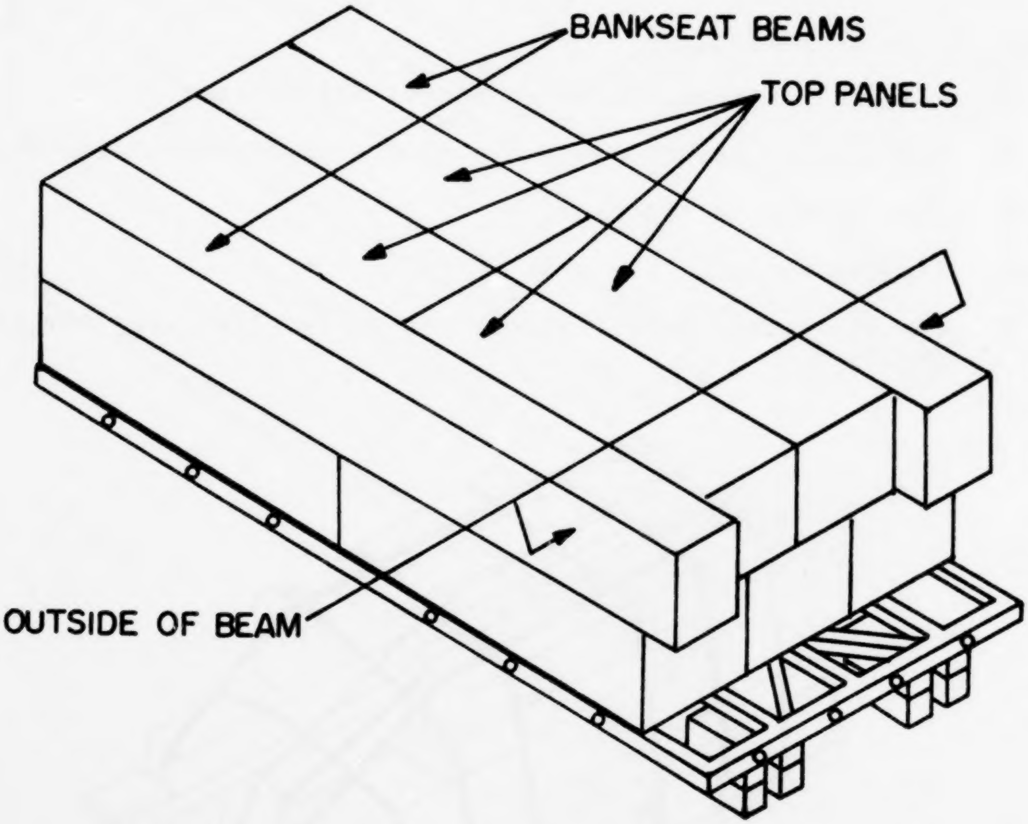
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 5.

Step 10. Place 4 top panels on top of the load. Ensure that the shoot bolts are locked after panels are butted together.

Step 11. Place 1 bankseat beam on each side of the center top panels. Ensure that the outside of the beam faces the outside of the load.



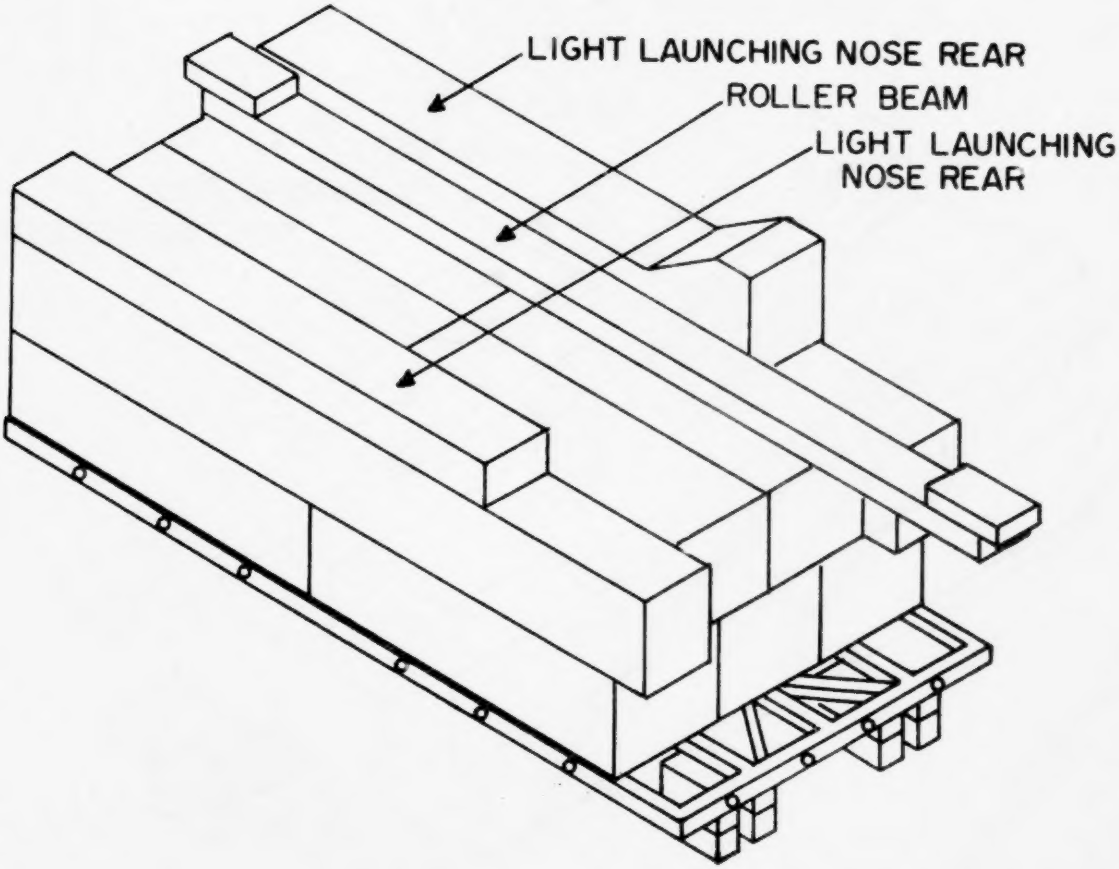
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 5.

Step 12. Place the following components on top of the load:

1 Light launching nose rear
1 Light launching nose front
1 Roller beam



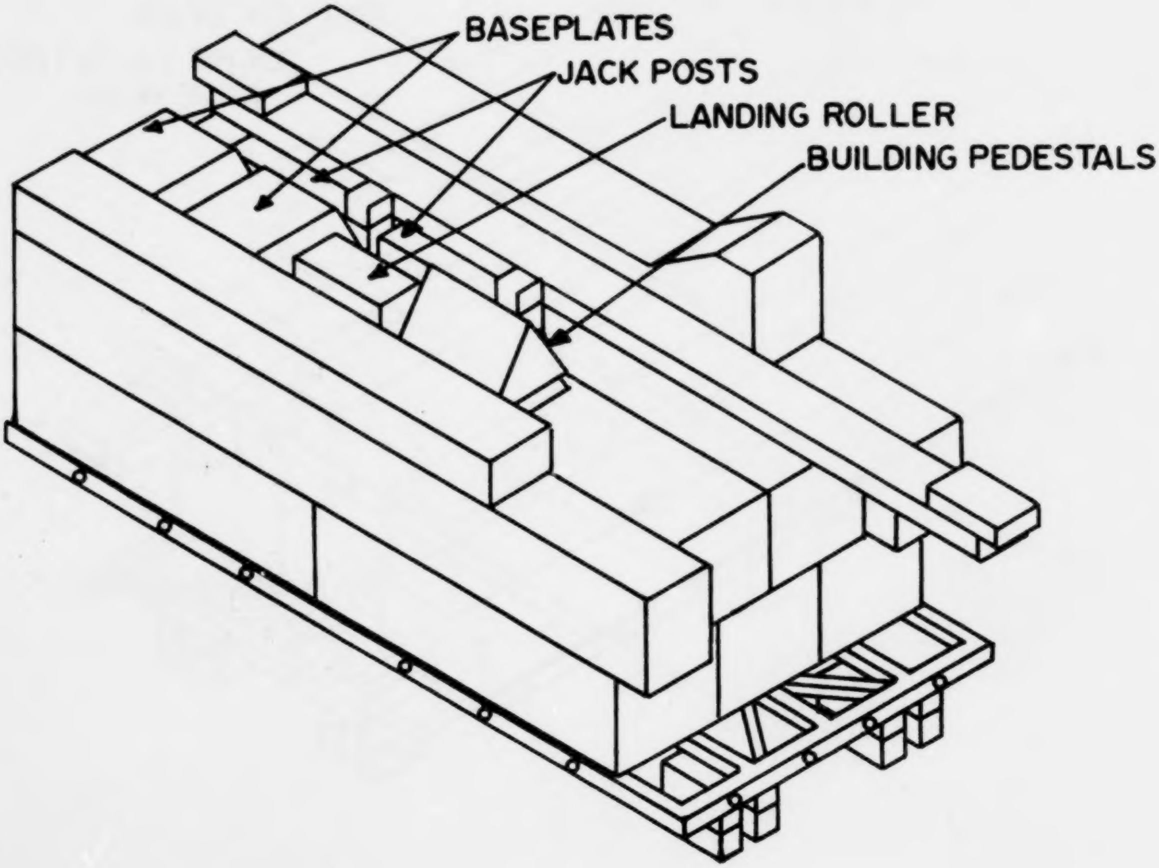
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 5.

Step 13. Place the following components on top of the load:

2 Baseplates
2 Building pedestals
1 Landing roller
2 Jack posts
2 Fixed supports (not shown)

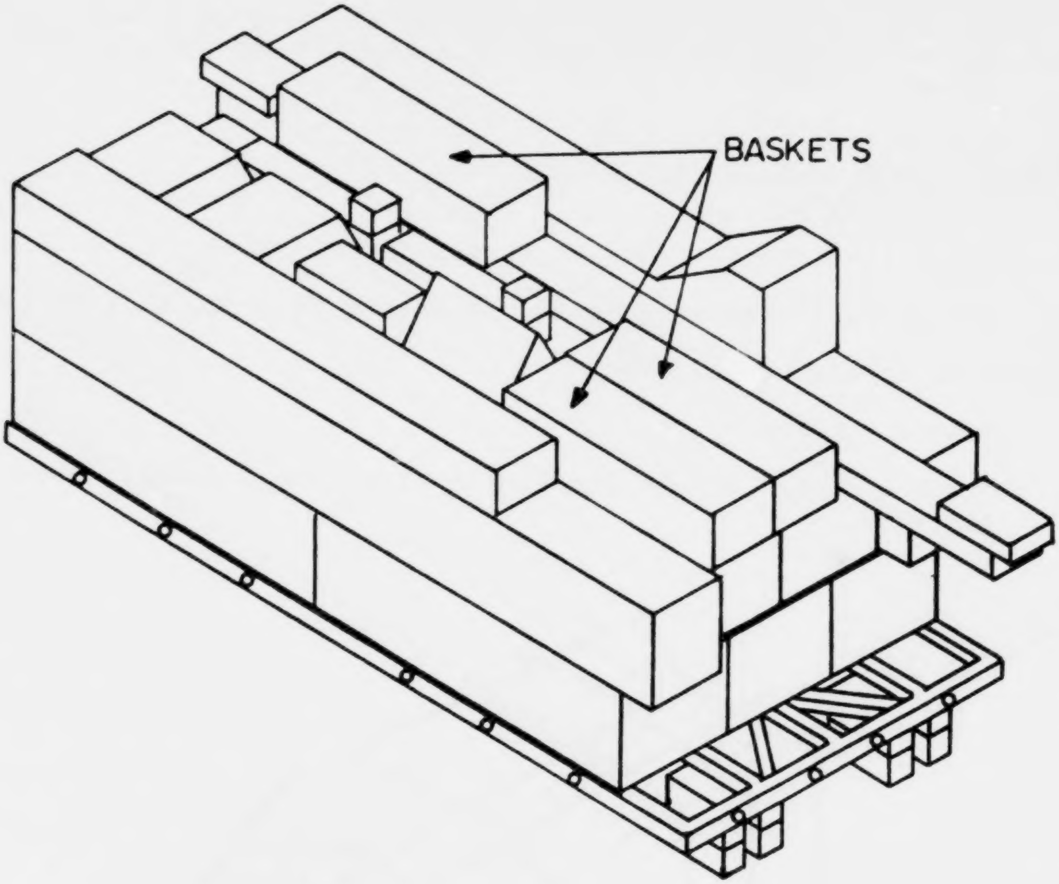


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 5.

Step 14. Place 3 baskets on top of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 5.

Step 15. Secure load with ten 10,000 lb. cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps

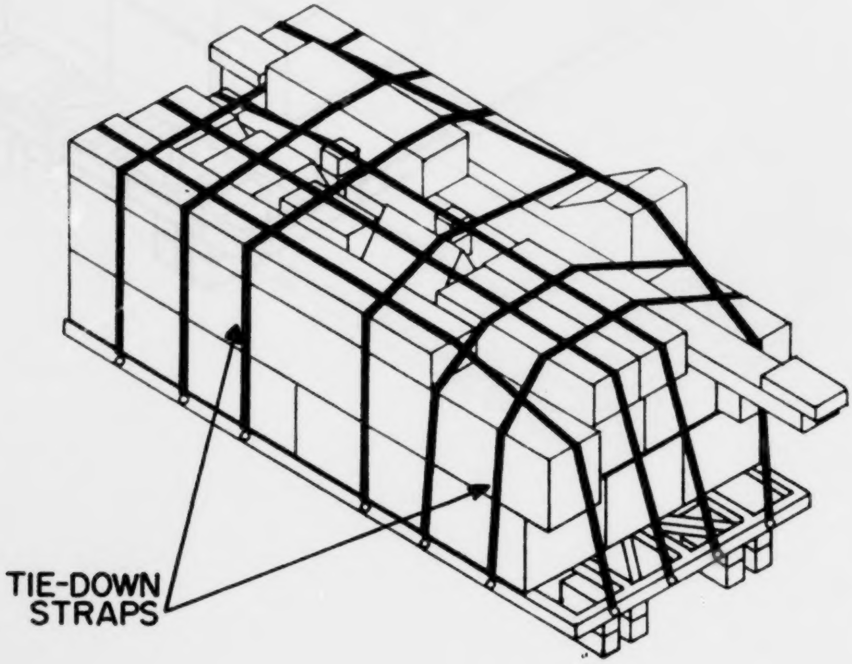
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



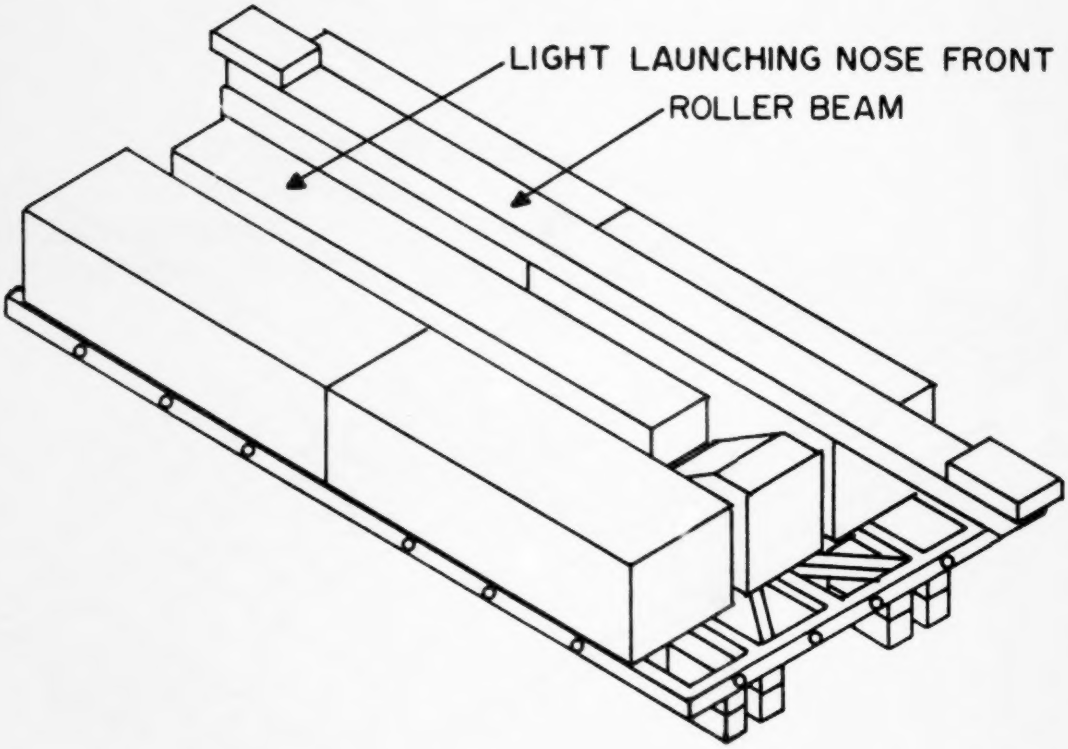
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 6.

Step 16. Place light launching nose front section on top of the light launching nose rear.

Step 17. Place roller beam on top of the top panels on the right side of the load.



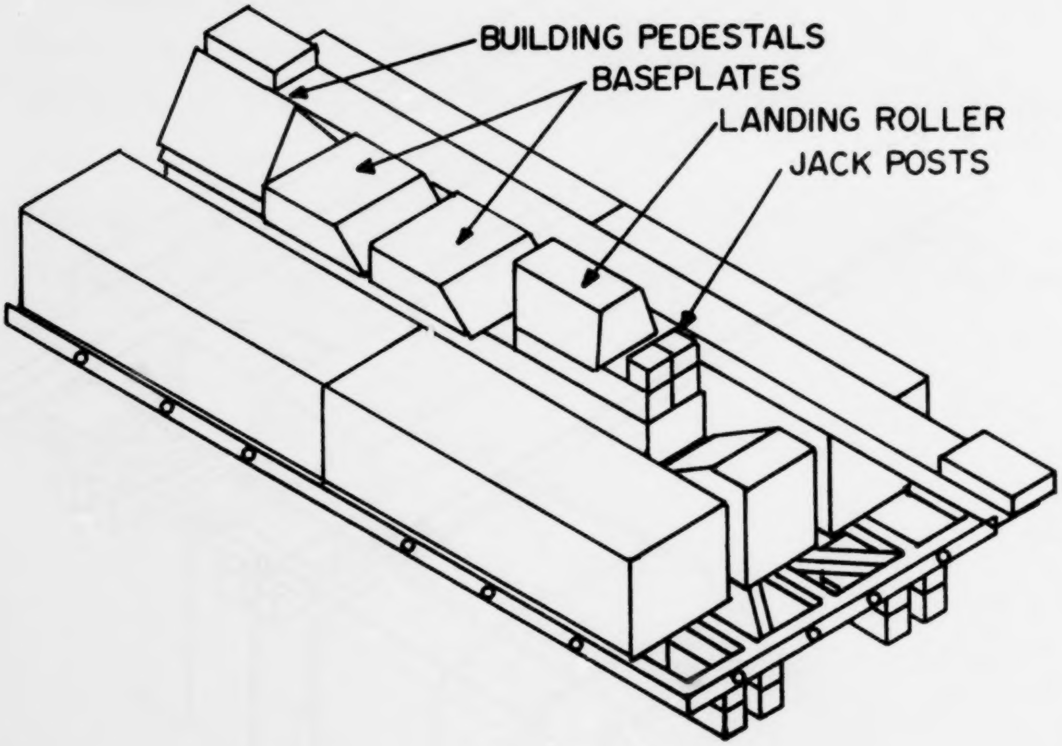
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 6.

Step 18. Place the following components on top of the nose sections:

2 Building pedestals
2 Baseplates
1 Landing roller
2 Jack posts
2 Fixed supports (not shown)

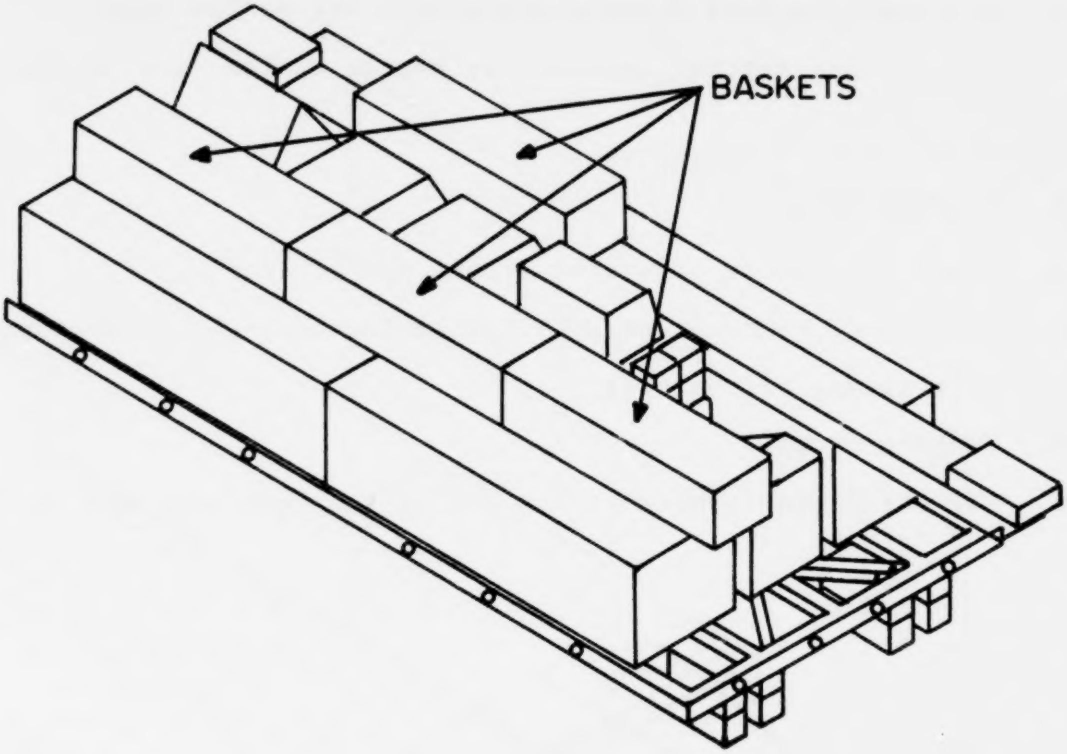


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 6.

Step 19. Place 4 baskets on top of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 6.

Step 20. Secure load with ten 10,000 lb cargo tie-down straps.

a. Place four straps lengthwisse across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

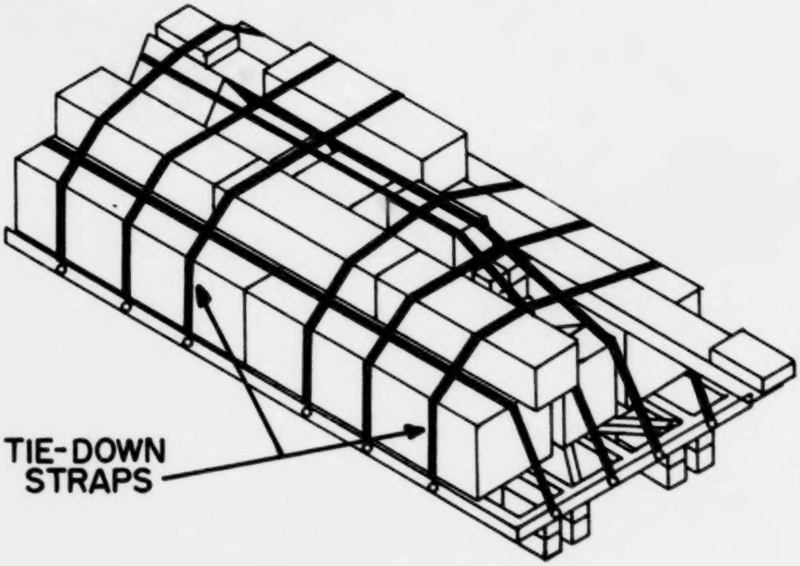
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.

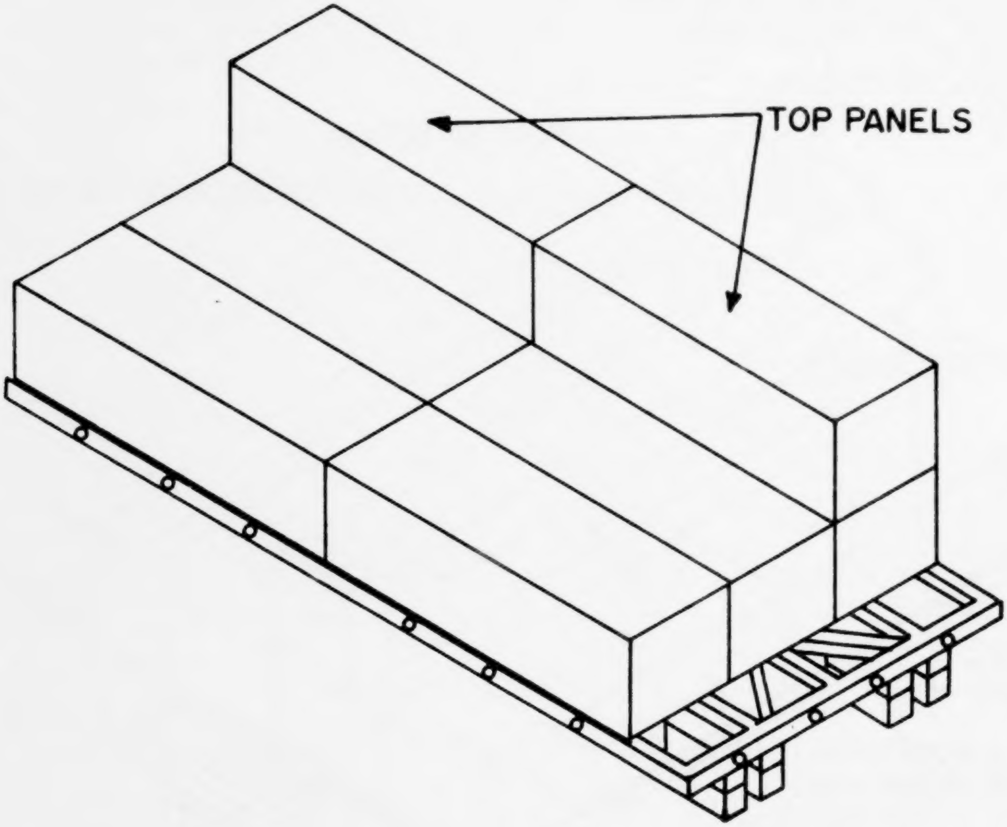


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 6.

Step 21. Place 2 top panels on top of the panels on the right side of the load. Ensure that the shoot bolts are placed in the locked position after panels are butted together.



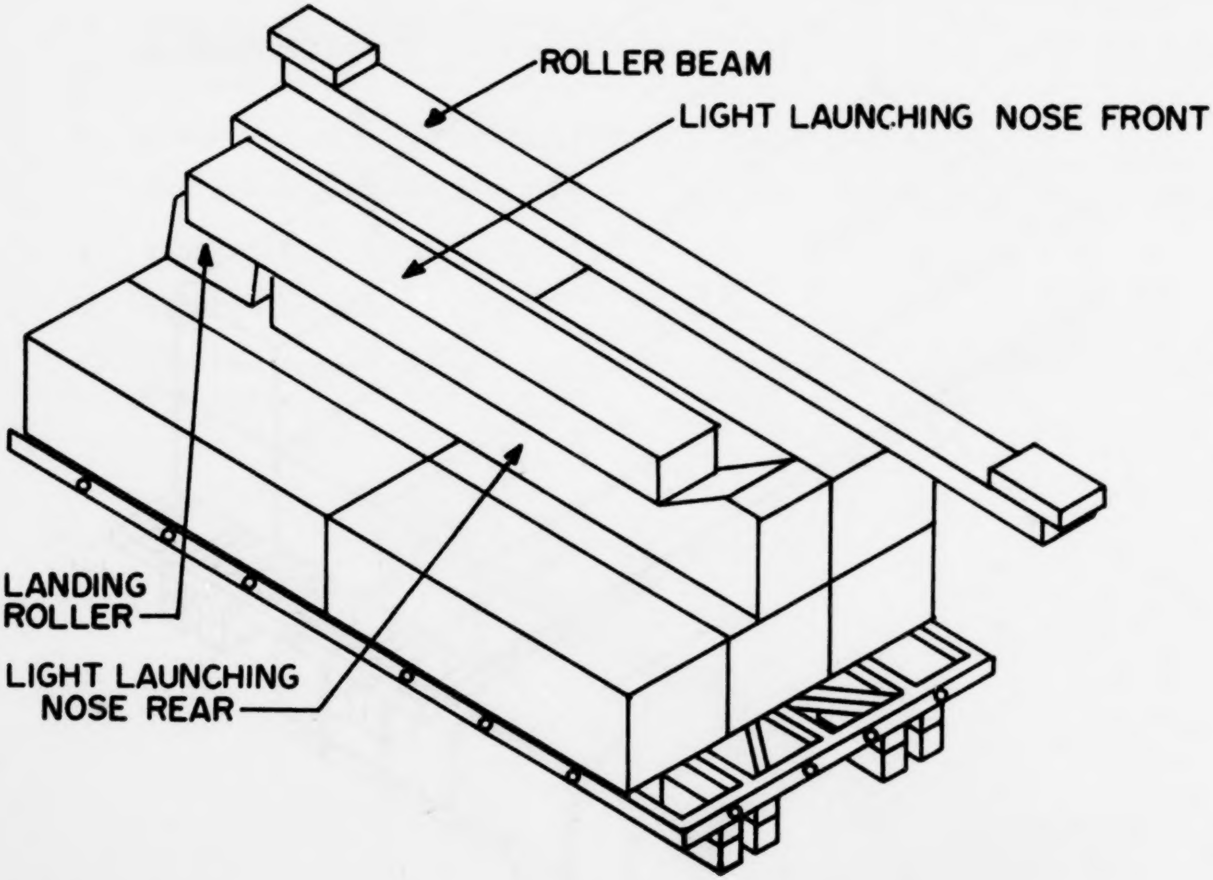
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 7/8.

Step 22. Place the following components on top of the load:

1 Light launching nose rear
1 Light launching nose front
1 Landing roller
1 Roller beam



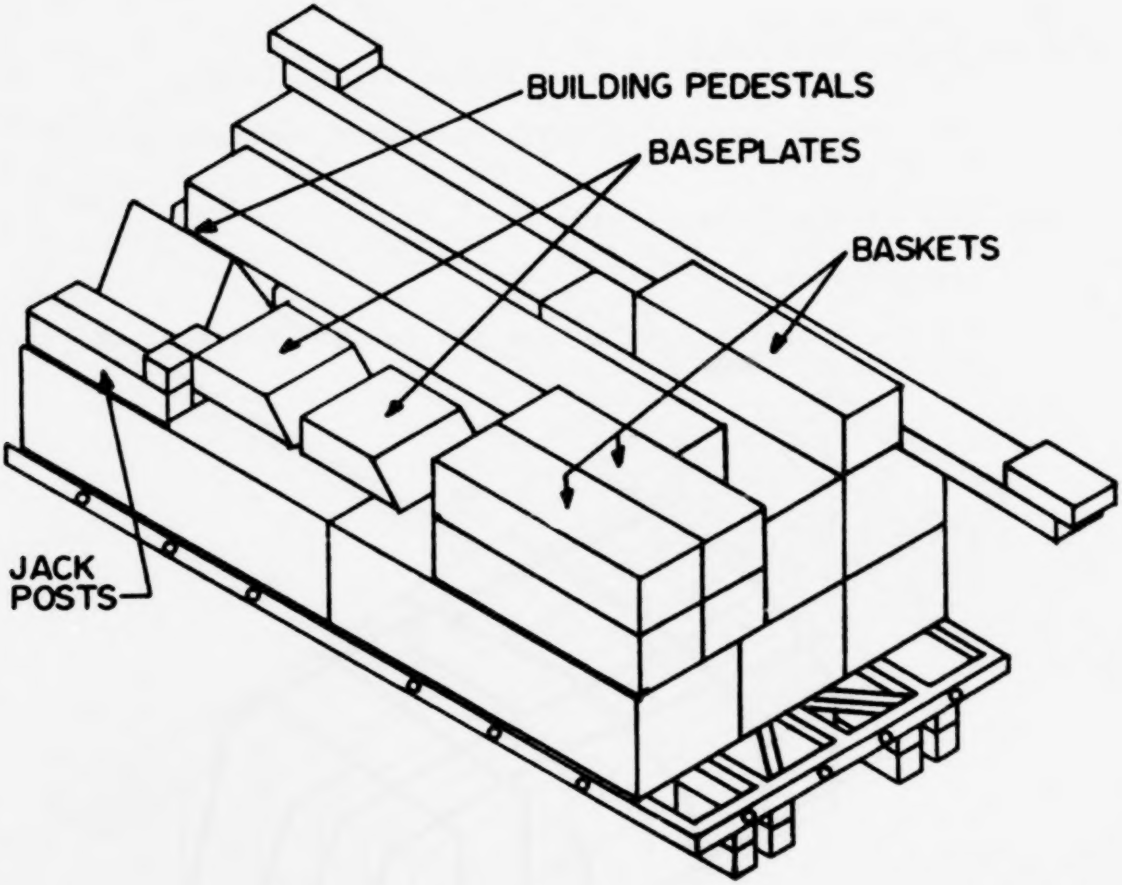
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 7/8.

Step 23. Place the following components on top of the load:

2 Building pedestals
2 Baseplates
2 Jack posts
2 Fixed supports (not shown)
5 Baskets



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (b) Pallet Load ES 7/8.

Step 24. Secure load with ten 10,000 lb cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

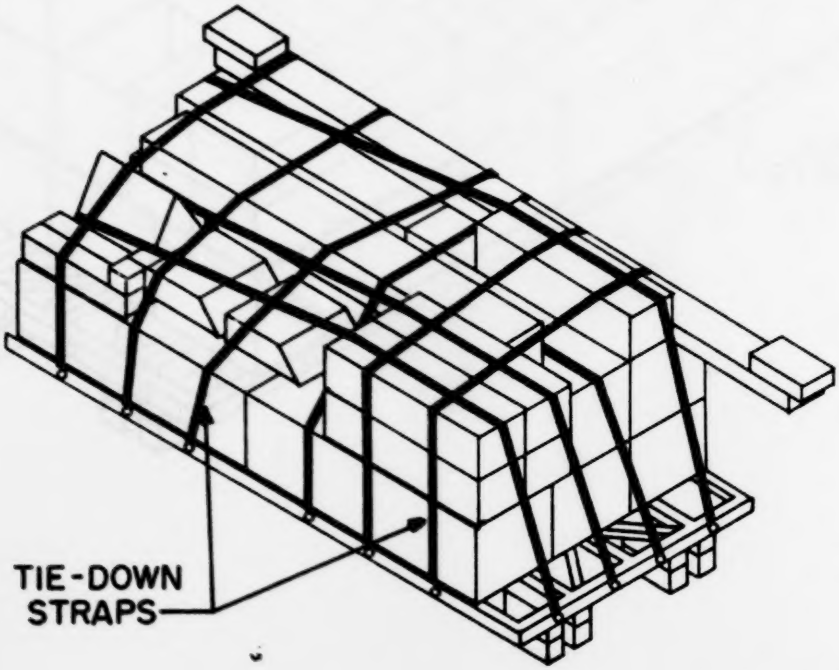
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

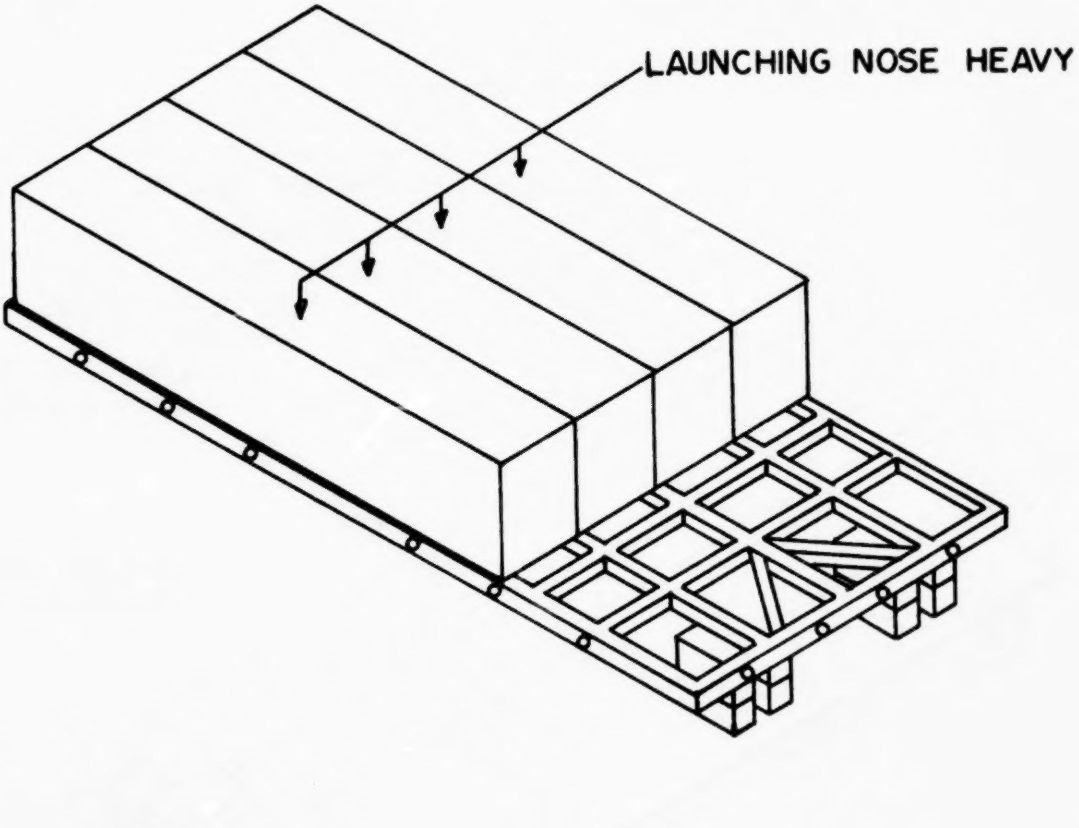
c. Single Story Pallet Loads (Cont).

(6) (c) Pallet Load ES 11/12.

Step 1. Place 4 launching nose heavy sections across the pallet.

a. The front of the nose sections are flush with front of pallet.

b. Side of the outside nose sections are flush with the side of the pallet.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

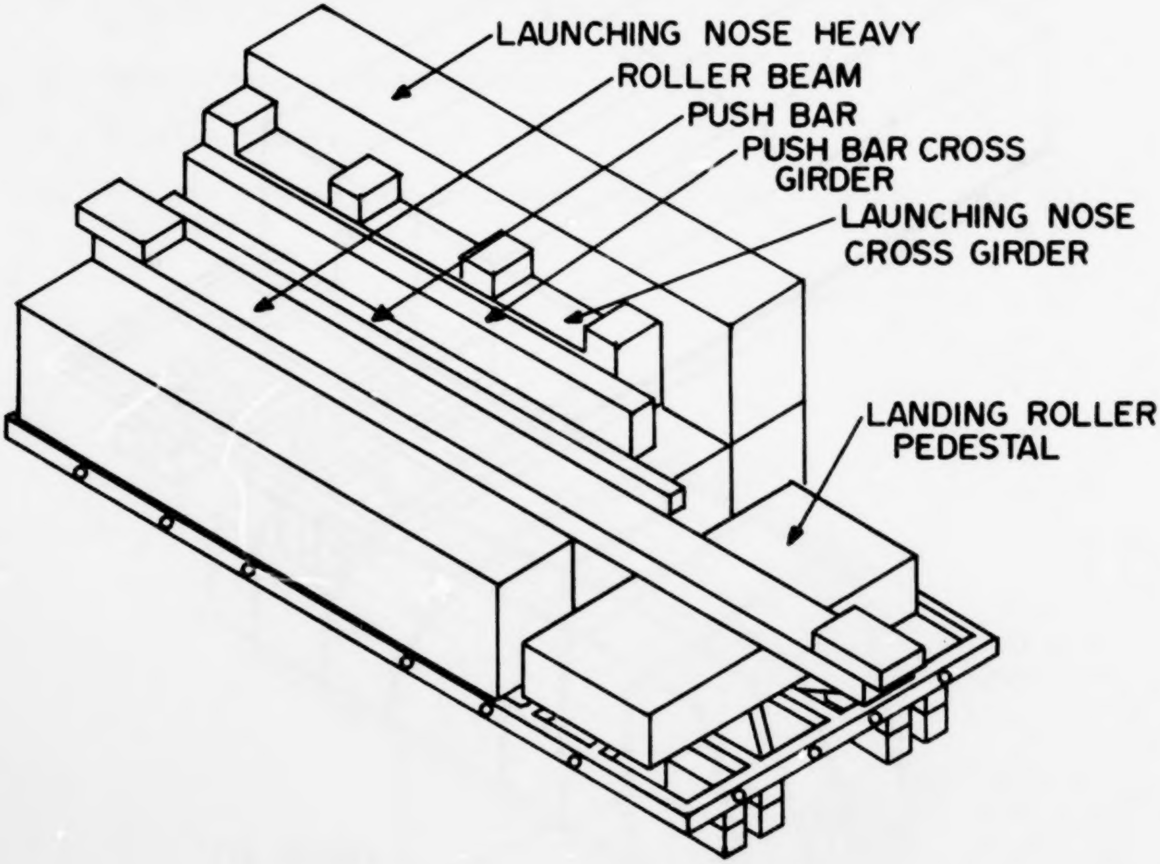
(6) (c) Pallet Load ES 11/12.

Step 2. Place 1 launching nose heavy section on top of the nose section on the right side of the pallet.

Step 3. PLace 1 landing roller pedestal across the rear of the pallet behind the nose sections.

Step 4. Place the following components on top of the nose sections:

1 Roller beam
1 Push bar
1 Push bar cross girder
1 Launching nose cross girder



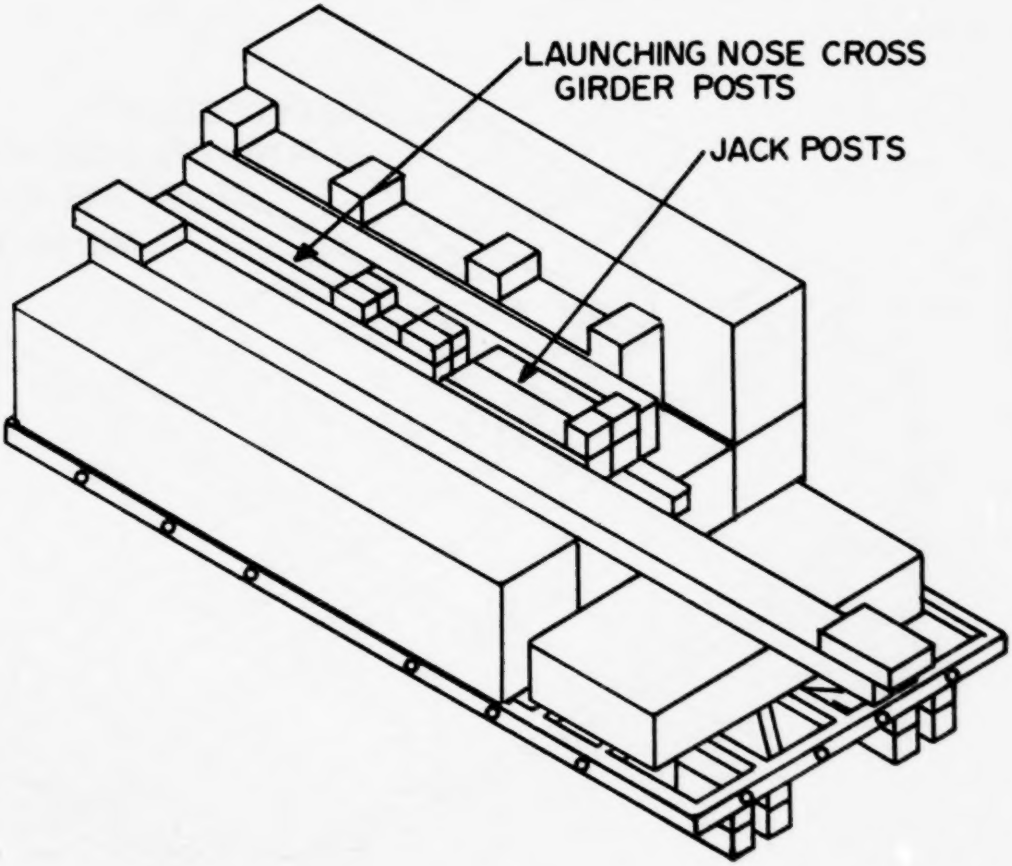
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (c) Pallet Load ES 11/12

Step 5. Place the following components on the top of the load:

2 Launching nose cross girder posts
2 Jack posts



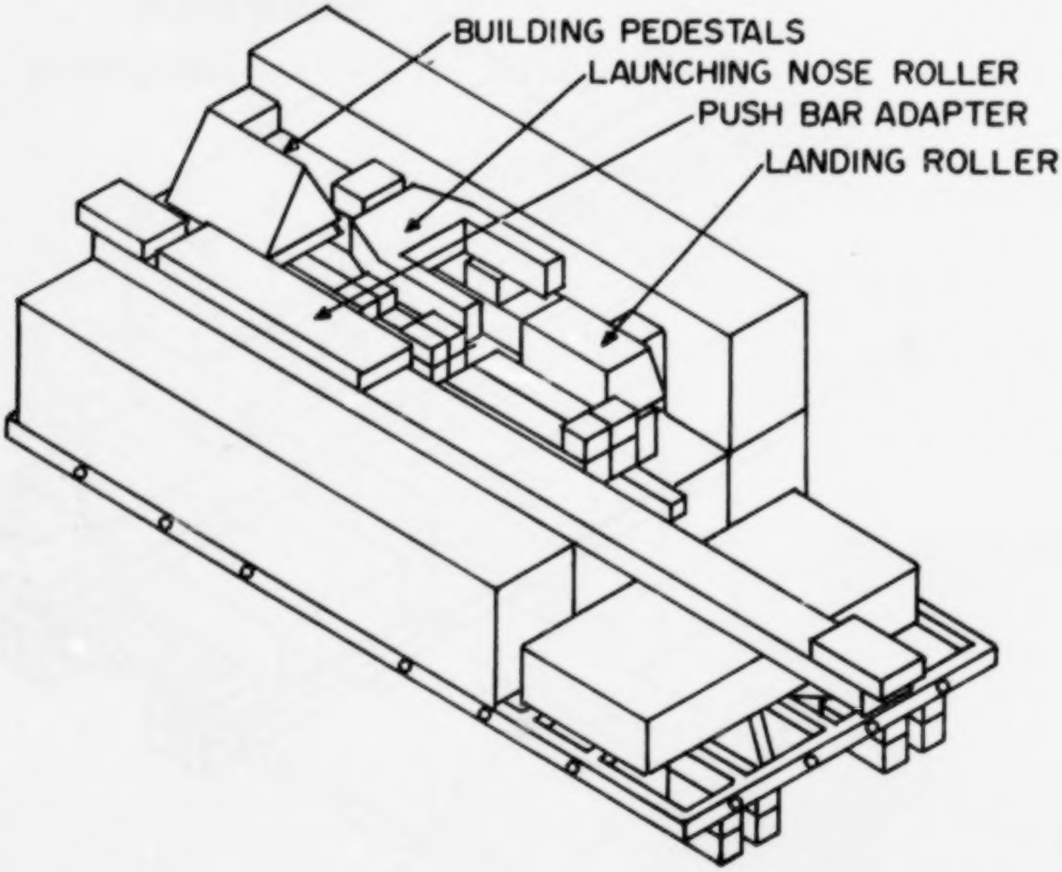
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (c) Pallet Load ES 11/12.

Step 6. Place the following components on the top of the load:

1 Push bar adapter
2 Building pedestals
1 Landing roller
1 Launching nose roller

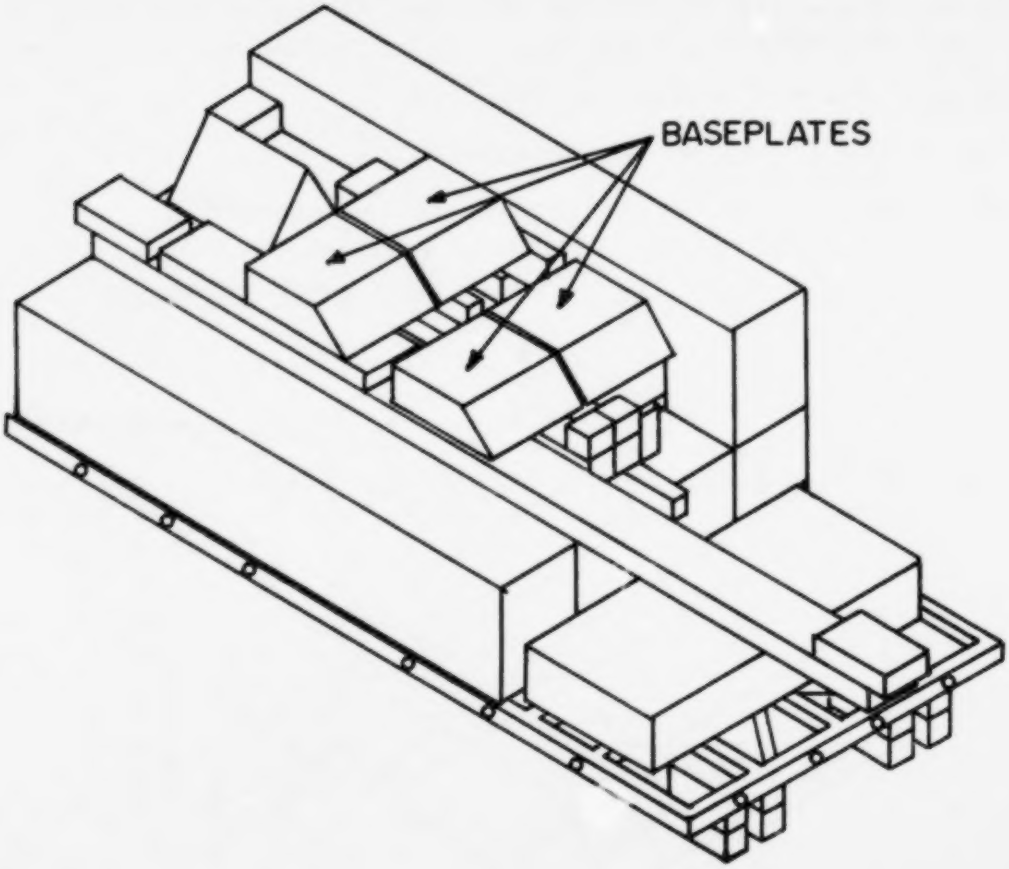


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (c) Pallet Load ES 11/12.

Step 7. Place 4 baseplates on top of the load.



c. Single Story Pallet Loads (Cont).

(6) (c) Pallet Load ES 11/12.

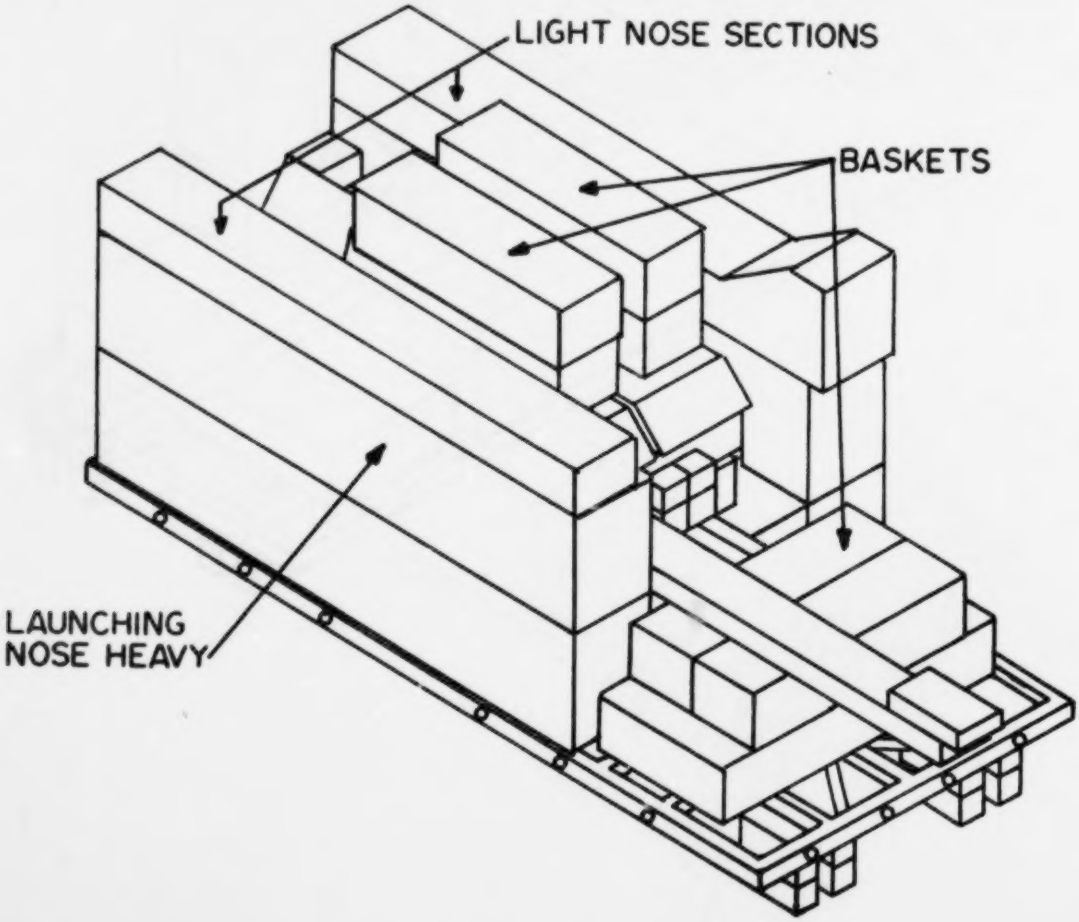
Step 8. Place 1 launching nose heavy section on top of the nose section on the left side of the pallet.

Step 9. Place the light nsoe sections on top of the heavy nose sections.

Step 10. Place 6 baskets on the load.

a. 4 are placed on the baseplates.

b. 2 are placed on the landing roller pedestal.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (c) Pallet Load ES 11/12.

Step 11. Secure load with ten 10,000 lb cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

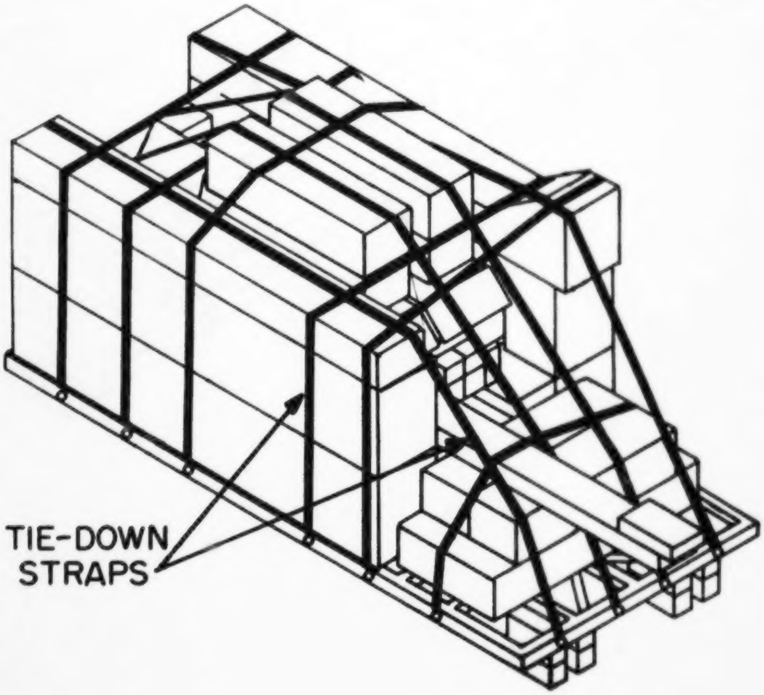
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (d) Pallet Load SSE and SSE 6/8.

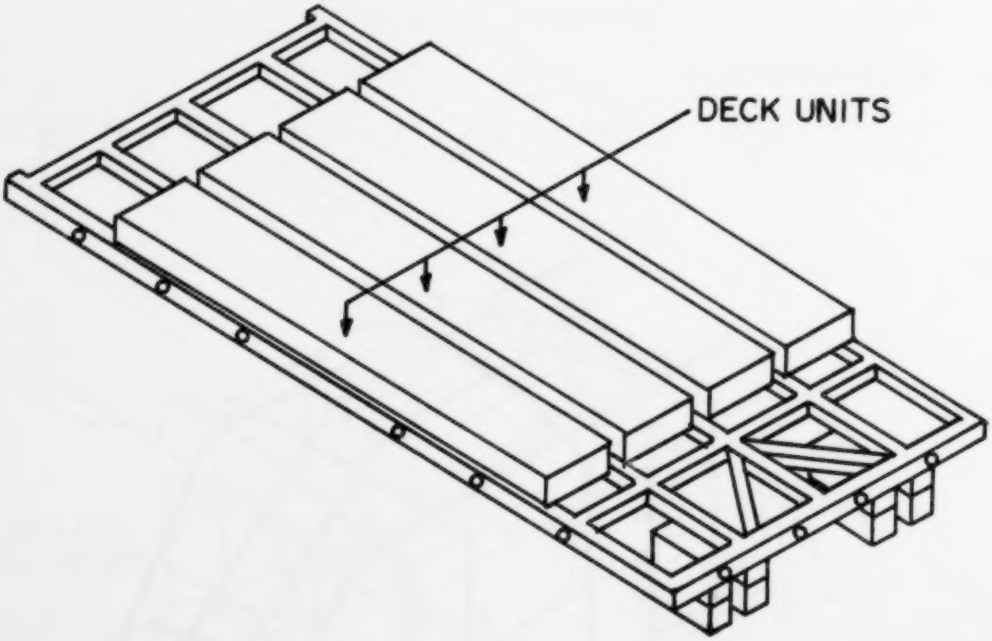
Step 1. Place 4 deck units on the pallet as shown.

a. Outside deck units are placed with edge flush with side of the pallet.

b. Center deck units are spaced approximately 3 in (7.6 cm) apart.

For SSE PROCEED TO STEP 2.

For SSE 6/8 PROCEED TO STEP 3.

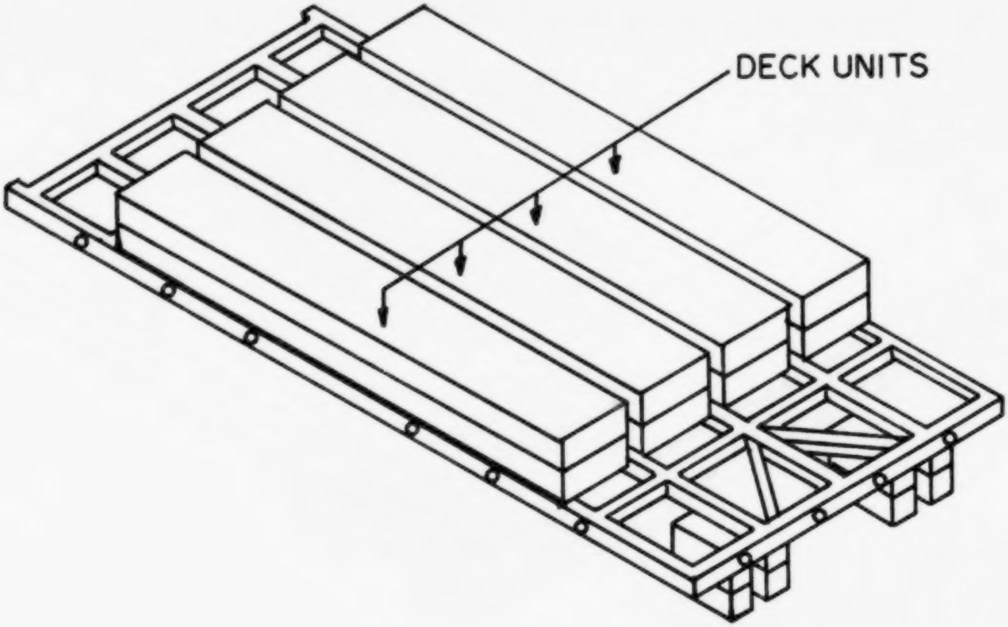


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (d) Pallet Load SSE.

Step 2. Place 4 deck units on top of the 4 deck units placed on the load in Step 1. Ensure that stacking lugs and recesses are used for correct alignment.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

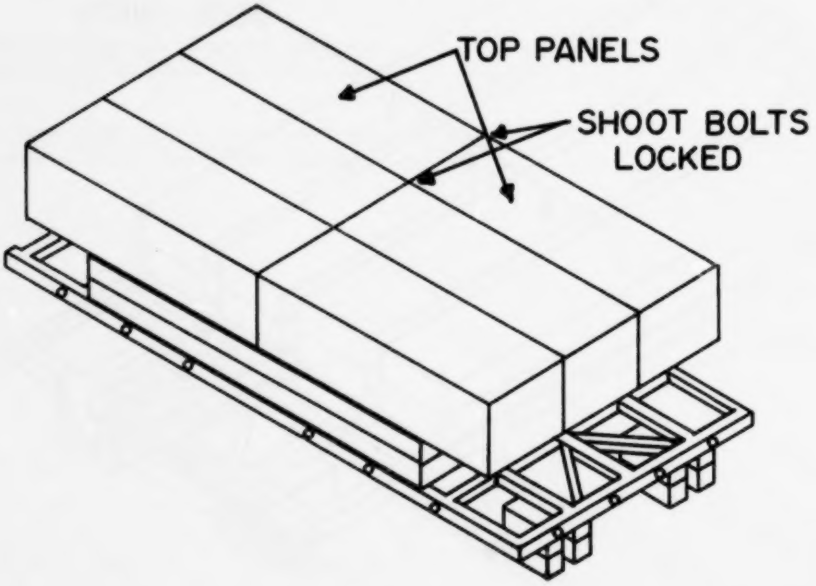
c. Single Story Pallet Loads (Cont).

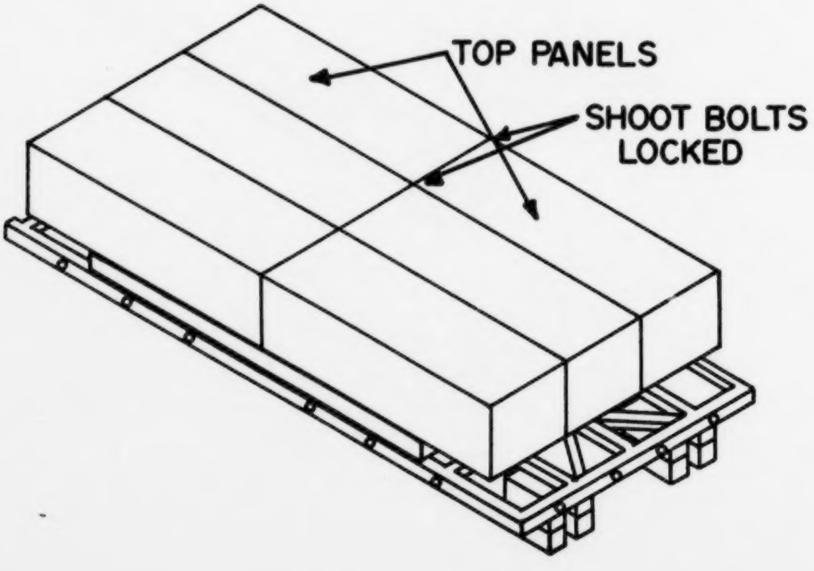
(6) (d) Pallet Load SSE and SSE 6/8.

Step 3. Place 6 top panels on top of deck units.

a. Ensure that shoot bolts are put in the locked position after panels are butted together.

b. Center top panels over deck units.



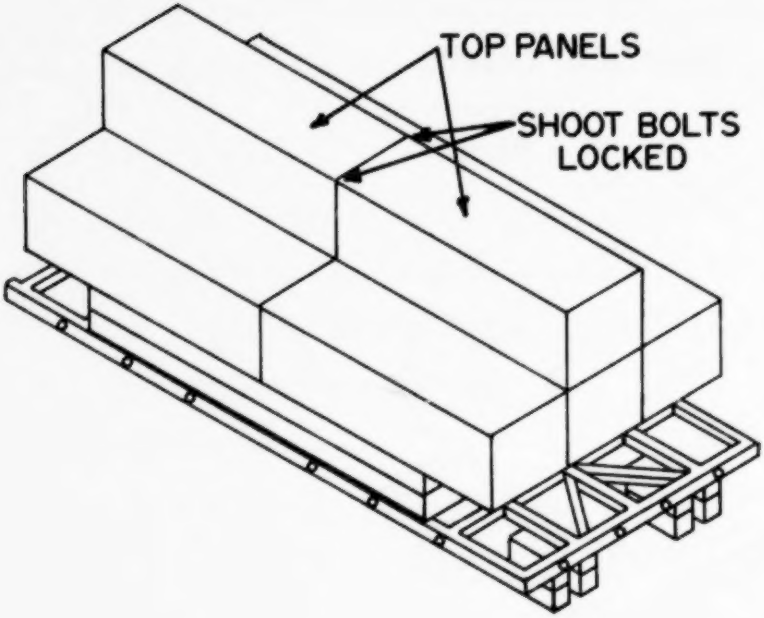


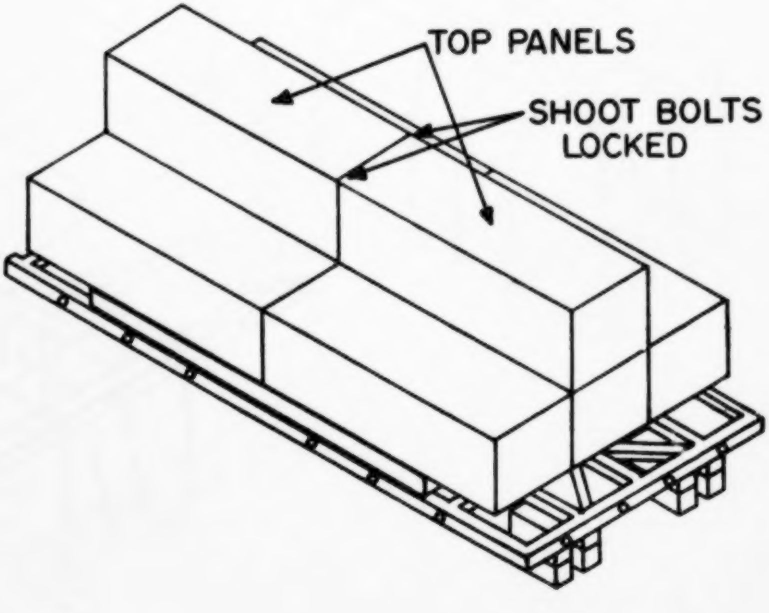
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (d) Pallet Load SSE and SSE 6/8.

Step 4. Place 2 top panels on top of the center top panels. Ensure shoot bolts are in locked position.



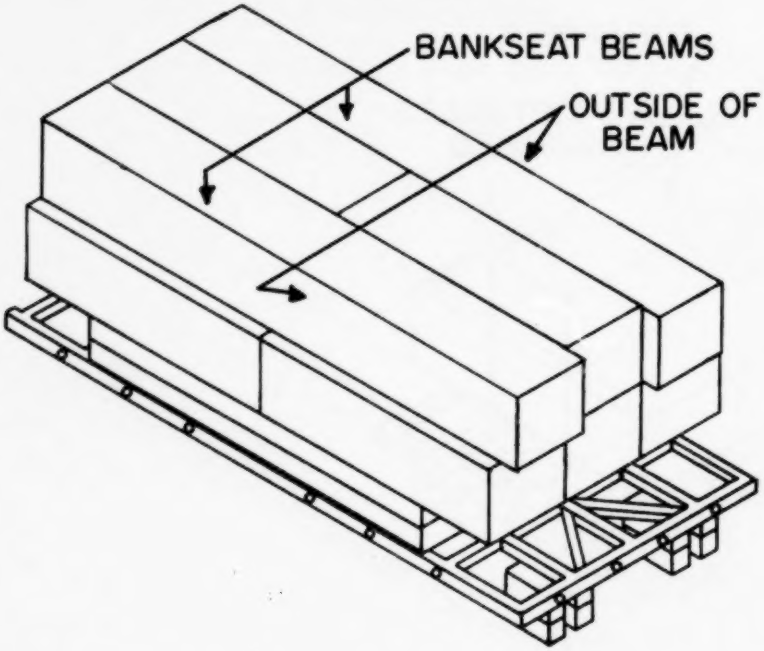


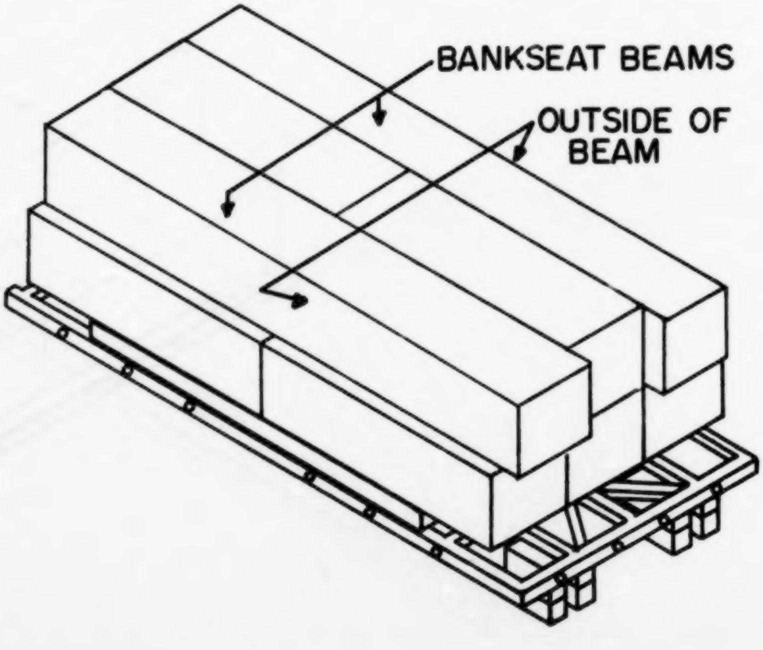
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (d) Pallet Load SSE and SSE 6/8.

Step 5. Place 1 bankseat beam on each side of the top panels loaded in Step 4. Ensure that the outside of the beam faces the outside of the load.





2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (d) Pallet Load SSE and SSE 6/8.

Step 6. Secure load with ten 10,000 lb. cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

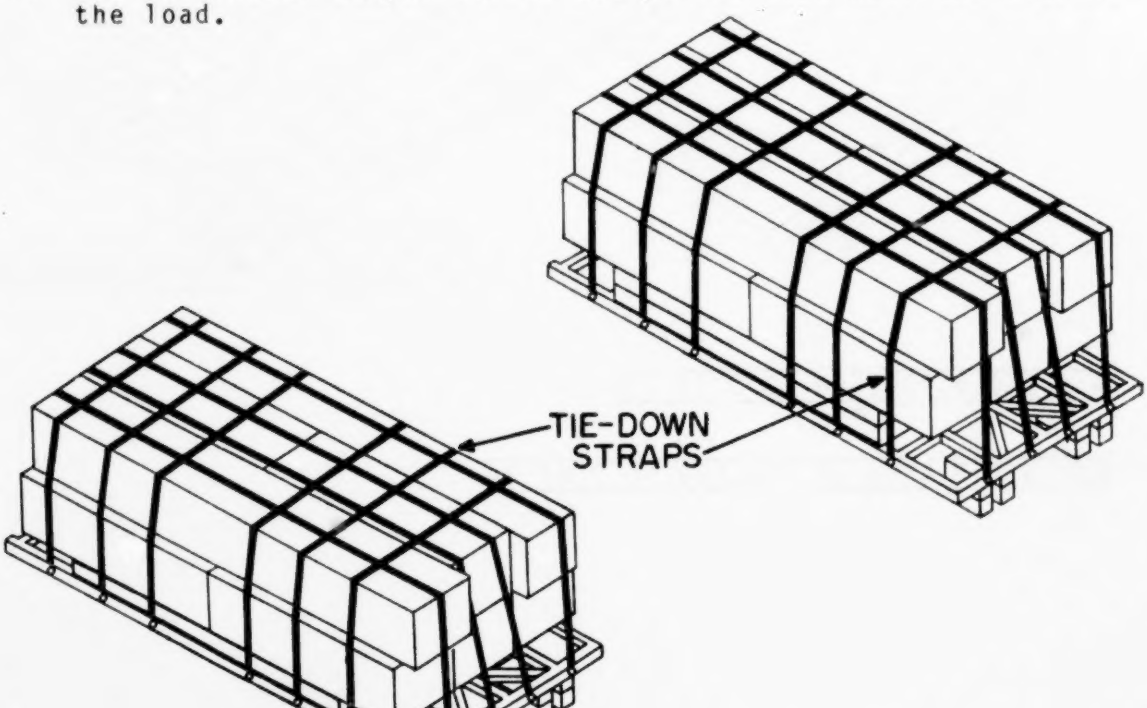
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

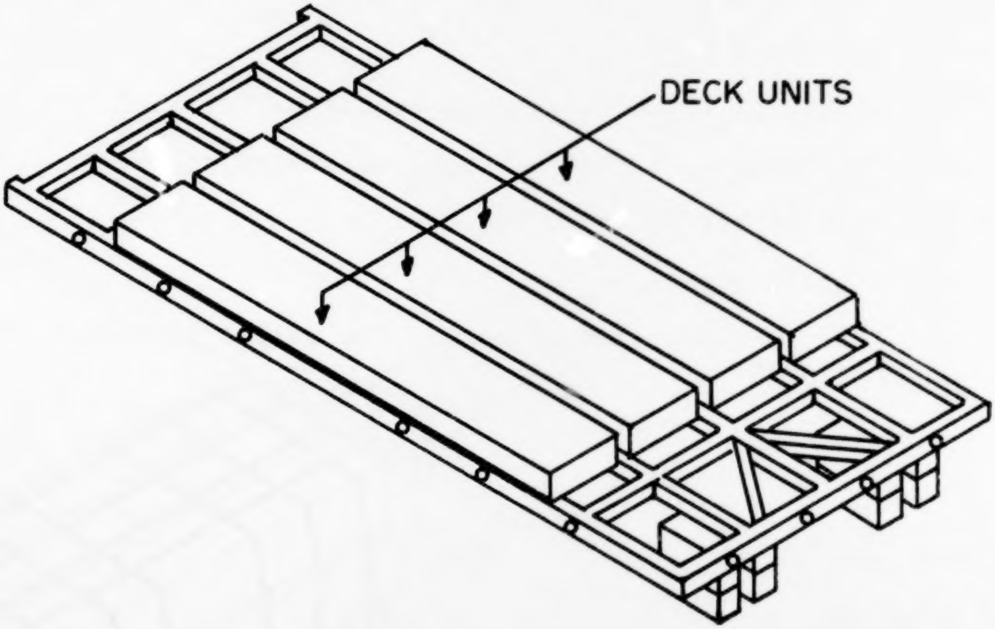
c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 8 thru 12.

Step 1. Place 4 deck units on the pallet as shown.

a. Outside deck units are placed with their edge flush with the side of the pallet.

b. Center deck units are spaced approximately 3 inches (7.6 cm) apart.



For SSC 8 PROCEED TO STEP 2.

For SSC 9 thru 12 PROCEED TO STEP 3.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

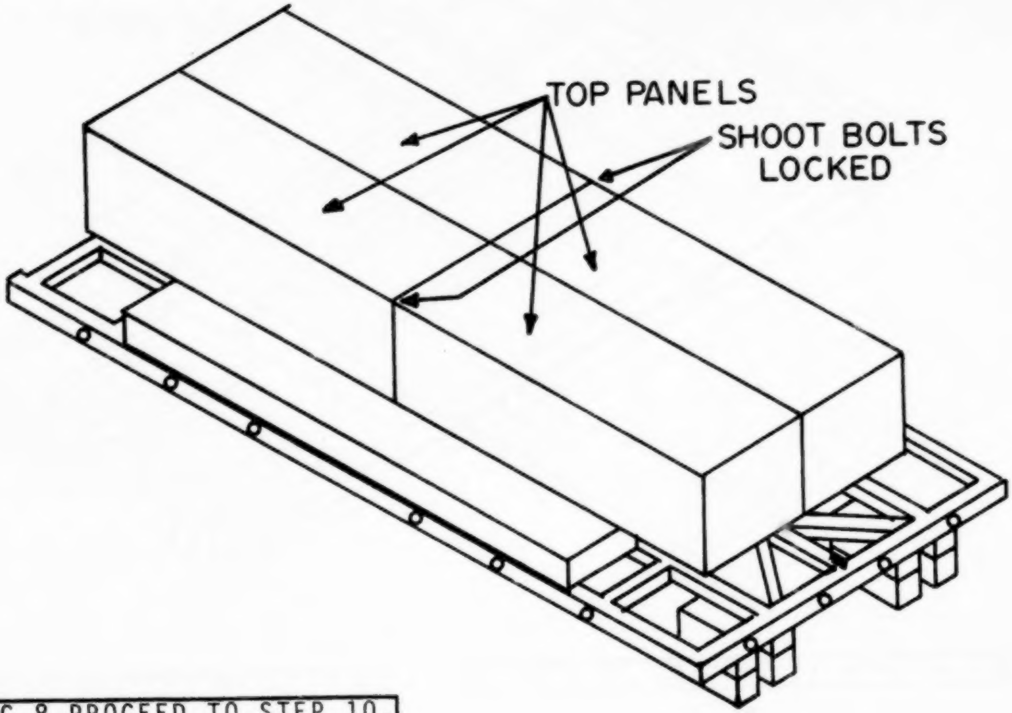
c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 8.

Step 2. Place 4 top panels on top of deck units.

a. Ensure that shoot bolts are put in locked position.

b. Center top panels over deck units (in both directions).



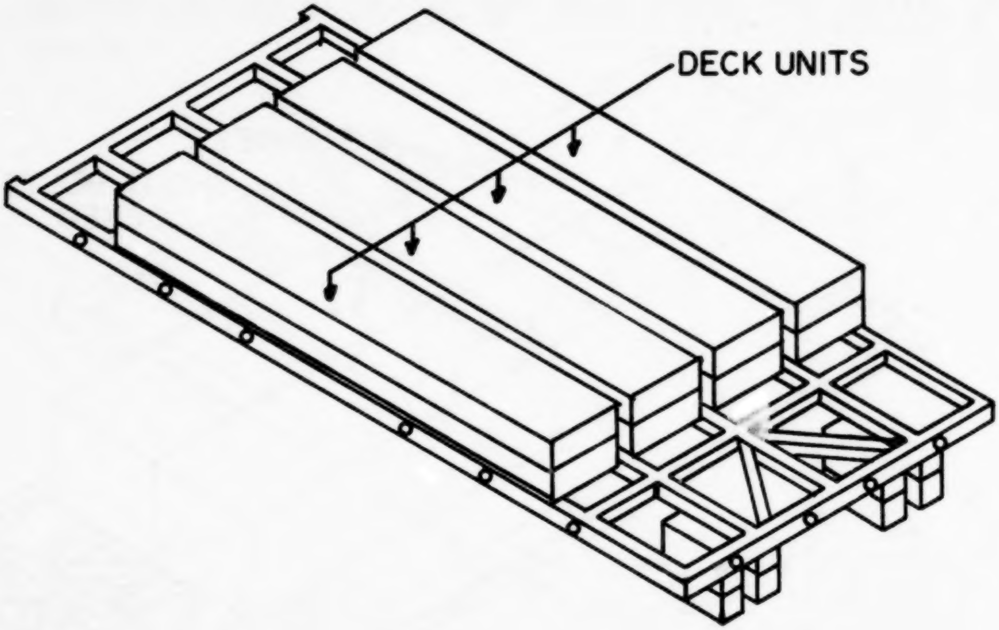
For SSC 8 PROCEED TO STEP 10.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 9 thru 12.

Step 3. Place 4 deck units on top of the 4 deck units loaded in Step 1. Ensure that stacking lugs and recesses are used for correct alignment.



For SSC 9 thru 11 PROCEED TO STEP 5.

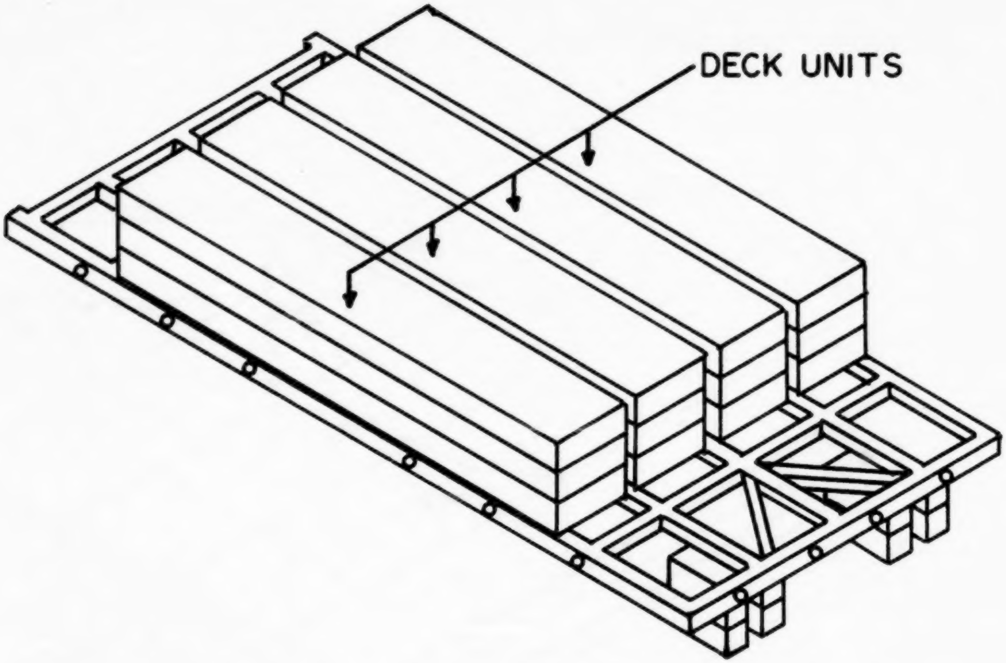
For SSC 12 PROCEED TO STEP 4.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 12.

Step 4. Place 4 deck units on top of the 4 deck units loaded in Step 3. Ensure that stacking lugs and recesses are used for correct alignment.



For SSC 12 PROCEED TO STEP 8.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

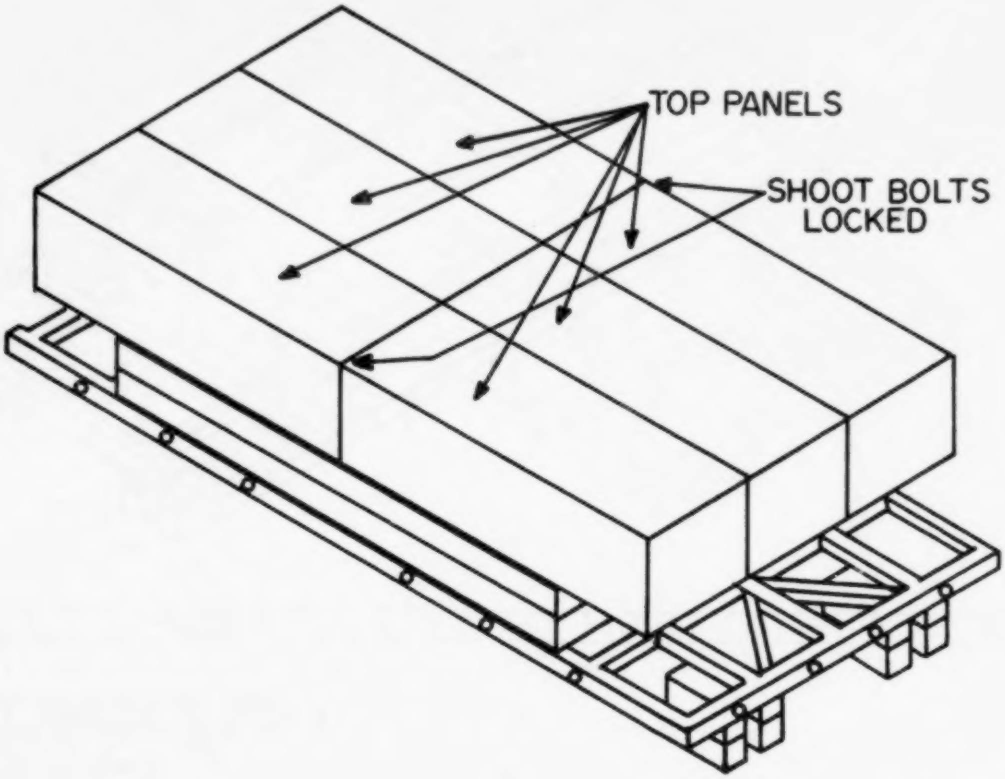
c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 9 thru 11.

Step 5. Place 6 top panels on top of deck units.

a. Ensure that shoot bolts are put in locked position after the panels are butted together.

b. Center top panels over deck units.



For SSC 10 PROCEED TO STEP 7.

For SSC 11 PROCEED TO STEP 10.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

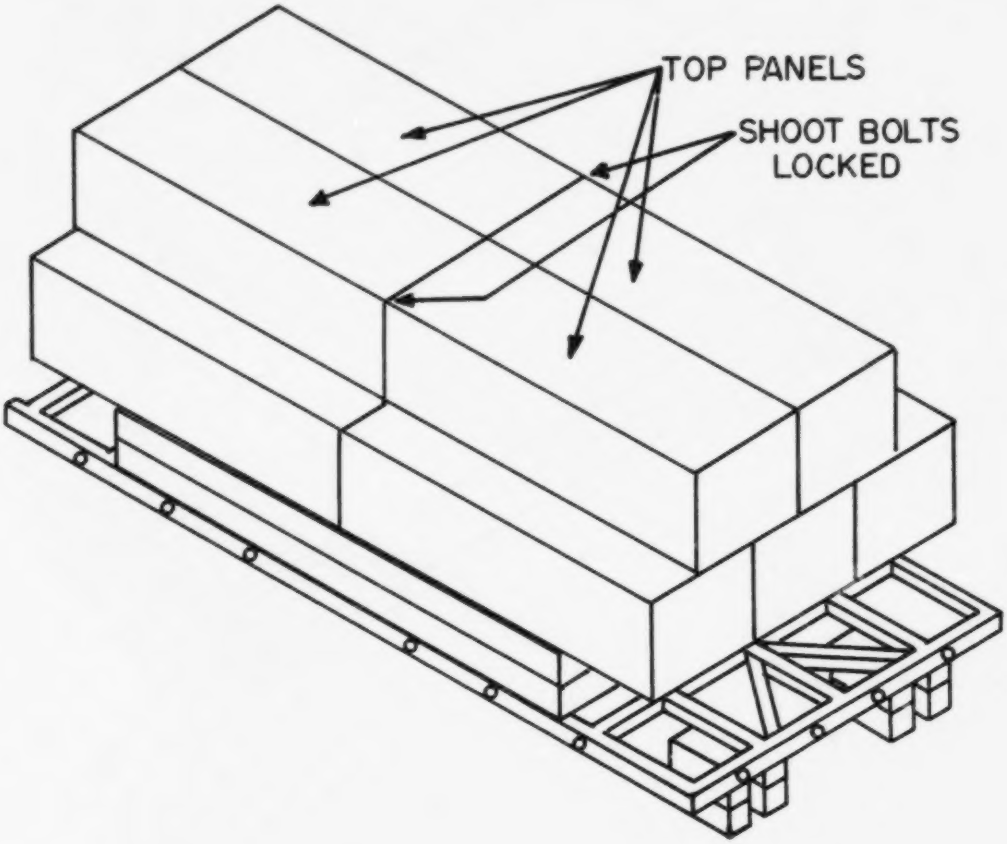
c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 9.

Step 6. Place 4 top panels on top of top panels loaded in Step 5.

a. Ensure that shoot bolts are put in locked position.

b. Center the 4 top panels over the 6 top panels (in both directions).



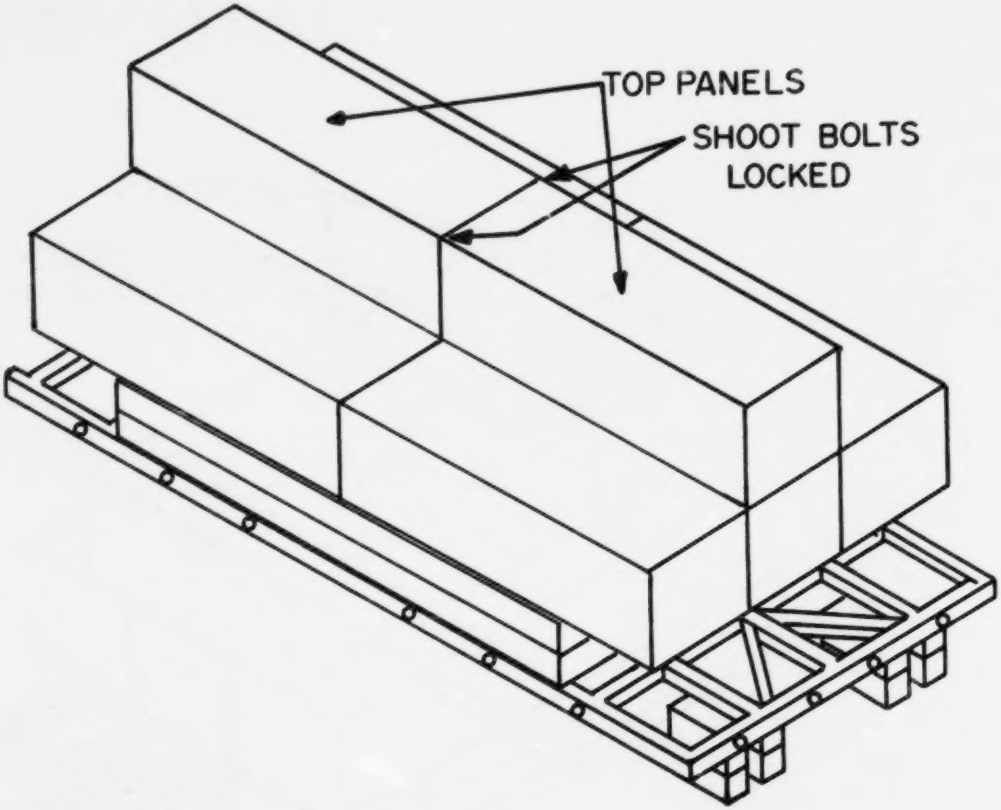
For SSC 9 PROCEED TO STEP 10.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 10.

Step 7. Place 2 top panels on top of the center top panels. Ensure shoot bolts are in locked position.



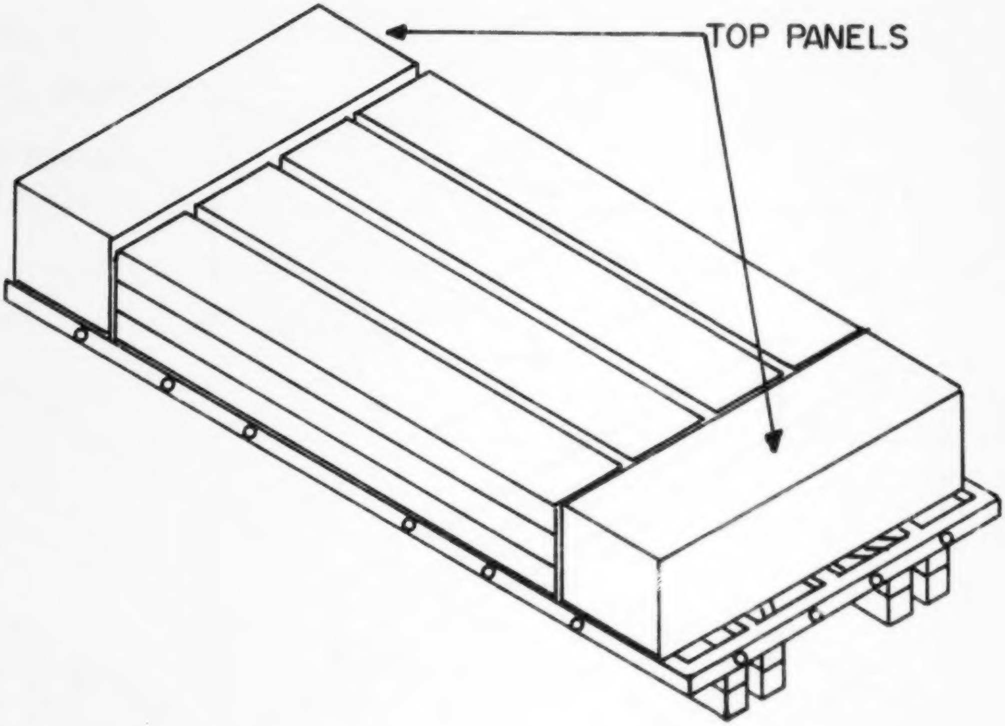
For SSC 10 PROCEED TO STEP 10.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 12.

Step 8. Place 2 top panels across the front and rear of the pallet as shown.

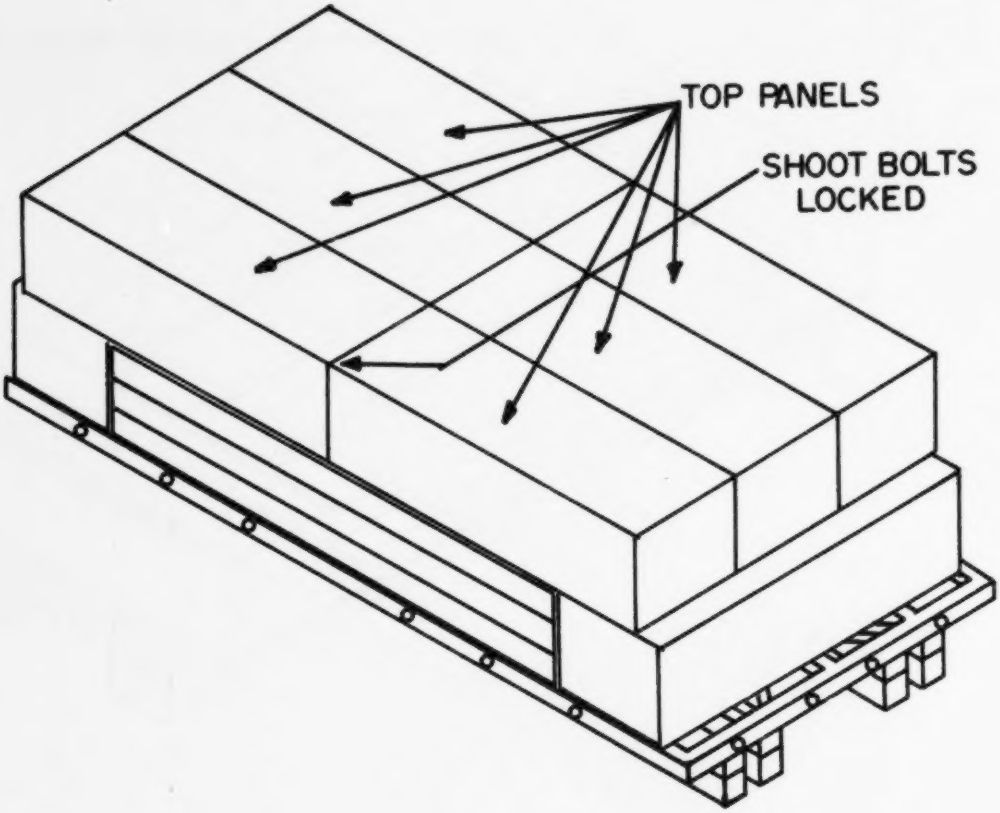


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 12.

Step 9. Place 6 top panels on deck units and top panels. Ensure that shoot bolts are placed in locked position.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 8 thru 12.

Step 10. Secure load with ten 10,000 16 cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of pallet.

c. Hook straps to shackles.

d. Tighten straps.

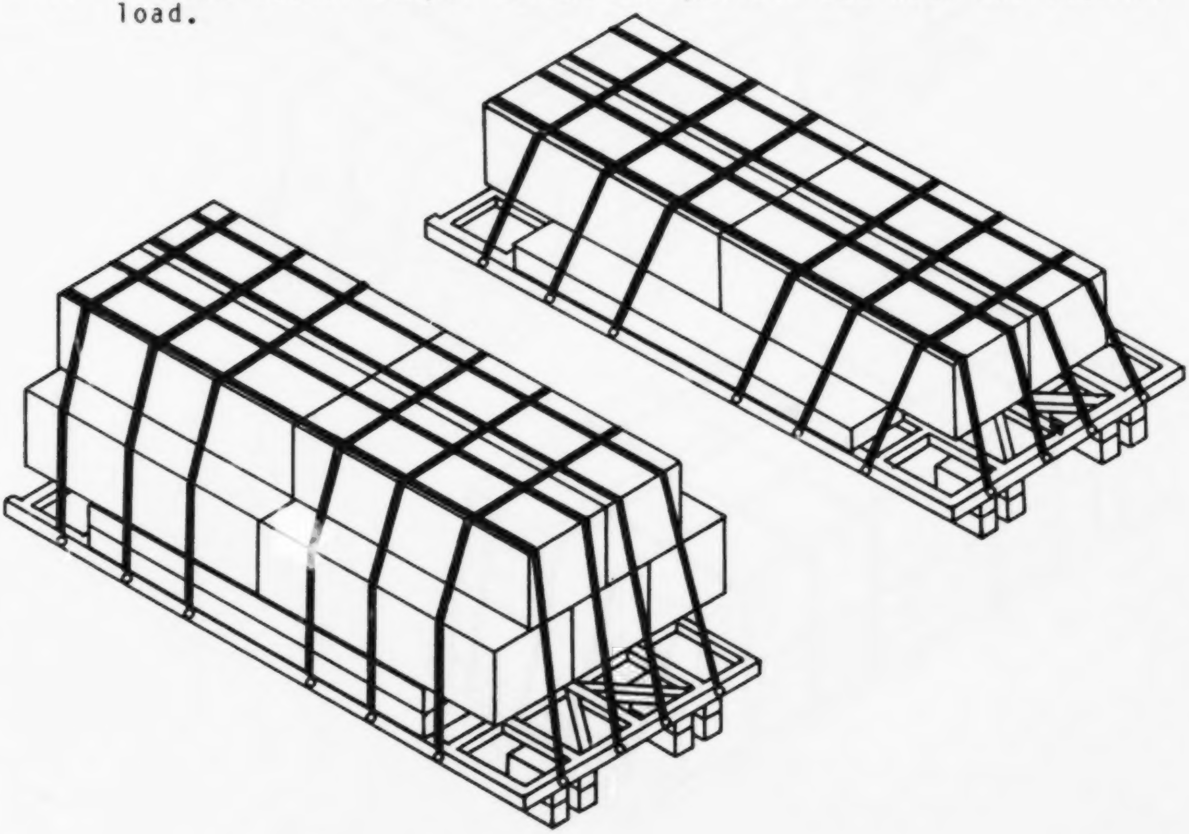
e. Place six straps crosswise across the pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

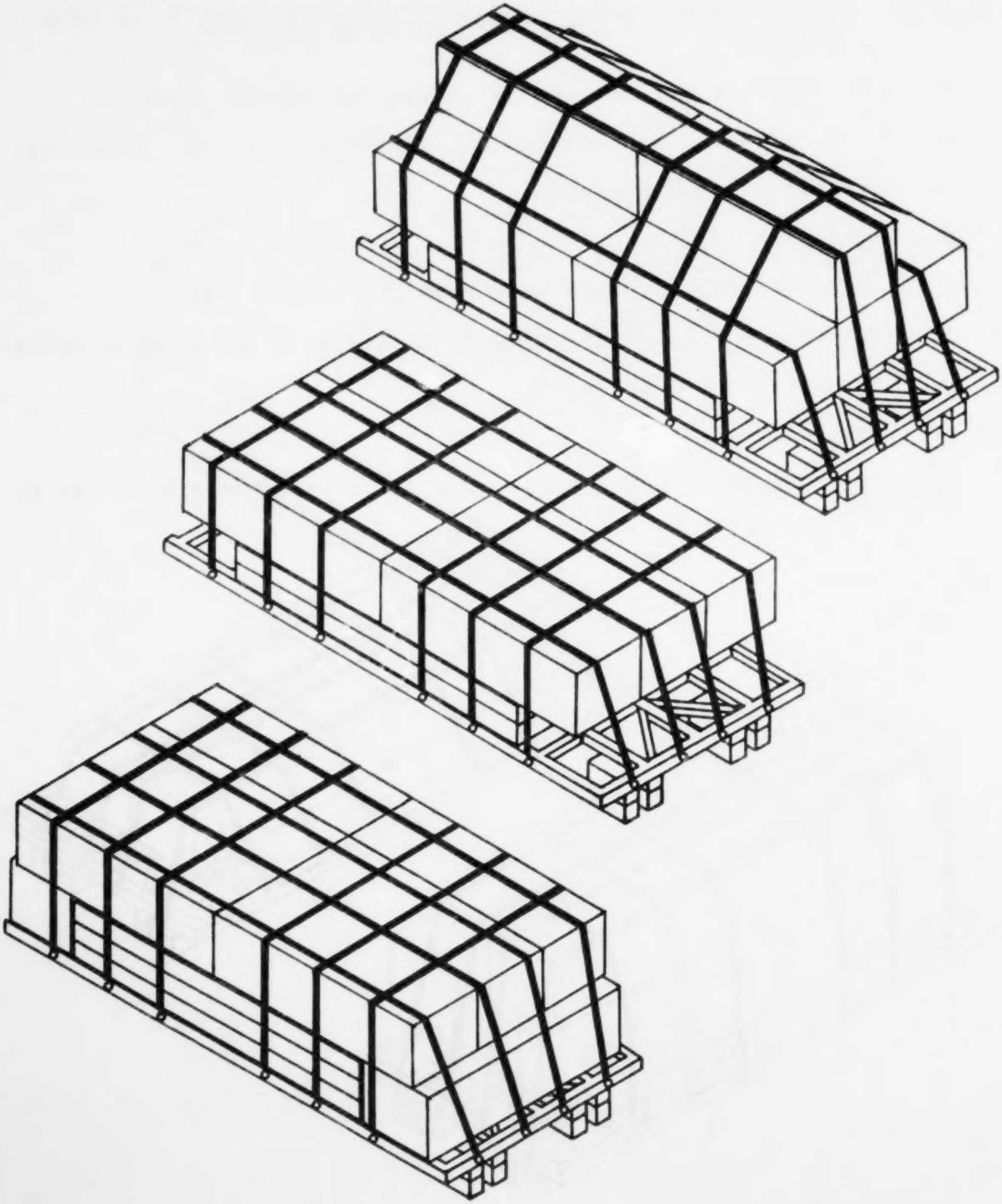
i. Tie the rubber bumper across the pallet load near the rear of load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

c. Single Story Pallet Loads (Cont).

(6) (e) Pallet Load SSC 8 thru 12 (Cont).



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads.

(1) Double story pallet loads are basic variations of 4 different types. These types are:

(a) ED - Erection Double
(b) LR/D - Long Ramp/Deck
(c) EOB - End of Bridge
(d) DSC - Double Story Center

(2) ED pallets contain the erection and launch components.

(3) LR/D pallets contain long ramp and deck units.

(4) EOB pallets contain all the components needed to construct the end of bridge with one variation having two long ramps.

(5) DSC pallets contain complete bays of double story bridge. For example, a DSC 2 pallet has two complete bays of bridge on it.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont)

	2E + 1 Bay DS					2E + 2 Bay DS				
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2
Aid, Panel Erection	2	-	-	-	-	2	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	1	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	1	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	2	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-	1	1	-
Brace, Sway	-	-	2	2	1	-	-	2	2	2
Bracket Assy, Lifting	2	-	-	-	-	2	-	-	-	-
Cable, Extractor	1	-	-	-	-	1	-	-	-	-
Curb	-	-	4	4	2	-	-	4	4	4
Deck	-	4	8	8	4	-	4	8	8	8
Girder, Cross Frame	2	-	-	-	-	2	-	-	-	-

d. Double Story Pallet Loads (Cont)

	2E + 1 Bay DS					2E + 2 Bay DS				
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2
Girder, Launching Nose	1	-	-	-	-	1	-	-	-	-
Girder, Push Bar	1	-	-	-	-	1	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	6	-	-	-	-
Nose, Light, Front	1	-	-	-	-	1	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	1	-	-	-	-
Panel, Bottom	-	-	-	-	2	-	-	-	-	4
Panel, End Taper	-	-	2	2	-	-	-	2	2	-
Panel, Junction	-	-	2	2	-	-	-	2	2	-
Panel, Top	-	-	4	4	2	-	-	4	4	4

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont)

	2E + 1 Bay DS					2E + 2 Bay DS				
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2
Pedestal, Adj.	1	-	-	-	-	1	-	-	-	-
Plate, Base DS	4	-	-	-	-	4	-	-	-	-
Post Assy, Jack	2	-	-	-	-	2	-	-	-	-
Post, Launching Nose	2	-	-	-	-	2	-	-	-	-
Ramp, Long	-	12	-	2	-	-	12	-	2	-
Roller, Landing	1	-	-	-	-	1	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	1	-	-	-	-
Seat, Building Frame	4	-	-	-	-	4	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	4	-	-	-	-
Support, Jack	2	-	-	-	-	2	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

	2E + 3 Bay DS					2E + 4 Bay DS					
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC
Aid, Panel Erection	2	-	-	-	-	2	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	1	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	1	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	2	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-	1	1	-	-
Brace, Sway	-	-	2	2	3	-	-	2	2	1	3
Bracket Assy, Lifting	2	-	-	-	-	2	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	1	-	-	-	-	-
Curb	-	-	4	4	6	-	-	4	4	2	6
Deck	-	4	8	8	12	-	4	8	8	4	12
Girder, Cross Frame	2	-	-	-	-	2	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

	2E + 3 Bay DS					2E + 4 Bay DS					
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC
Girder, Launching Nose	1	-	-	-	-	1	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	1	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	6	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	1	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	1	-	-	-	-	-
Panel, Bottom	-	-	-	-	6	-	-	-	-	2	6
Panel, End Taper	-	-	2	2	-	-	-	2	2	-	-
Panel, Junction	-	-	2	2	-	-	-	2	2	-	-
Panel, Top	-	-	4	4	6	-	-	4	4	2	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

	2E + 3 Bay DS					2E + 4 Bay DS					
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC
Pedestal, Adj.	1	-	-	-	-	1	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	4	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	2	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	2	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	12	-	2	-	-
Roller, Landing	1	-	-	-	-	1	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	1	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	4	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	4	-	-	-	-	-
Support, Jack	2	-	-	-	-	2	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 5 Bay DS						2E + 6 Bay DS					
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC
Aid, Panel Erection	2	-	-	-	-	-	2	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	-	1	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	-	1	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	-	2	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-	-	1	1	-	-
Brace, Sway	-	-	2	2	2	3	-	-	2	2	3	3
Bracket Assy, Lifting	2	-	-	-	-	-	2	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	-	1	-	-	-	-	-
Curb	-	-	4	4	4	6	-	-	4	4	6	6
Deck	-	4	8	8	8	12	-	4	8	8	12	12
Girder, Cross Frame	2	-	-	-	-	-	2	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 5 Bay DS						2E + 6 Bay DS					
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC
Girder, Launching Nose	1	-	-	-	-	-	1	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	-	1	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	-	6	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	-	1	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	-	1	-	-	-	-	-
Panel, Bottom	-	-	-	-	4	6	-	-	-	-	6	6
Panel, End Taper	-	-	2	2	-	-	-	-	2	2	-	-
Panel, Junction	-	-	2	2	-	-	-	-	2	2	-	-
Panel, Top	-	-	4	4	4	6	-	-	4	4	6	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 5 Bay DS						2E + 6 Bay DS					
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC
Pedestal, Adj.	1	-	-	-	-	-	1	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	-	4	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	-	2	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	-	2	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	-	12	-	2	-	-
Roller, Landing	1	-	-	-	-	-	1	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	-	1	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	-	4	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	-	4	-	-	-	-	-
Support, Jack	2	-	-	-	-	-	2	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 7 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC	Pallet No. 7 DSC
Aid, Panel Erection	2	-	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-
Brace, Sway	-	-	2	2	1	3	3
Bracket Assy, Lifting	2	-	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	-	-
Curb	-	-	4	4	2	6	6
Deck	-	4	8	8	4	12	12
Girder, Cross Frame	2	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 7 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC	Pallet No. 7 DSC
Girder, Launching Nose	1	-	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	-	-
Panel, Bottom	-	-	-	-	2	6	6
Panel, End Taper	-	-	2	2	-	-	-
Panel, Junction	-	-	2	2	-	-	-
Panel, Top	-	-	4	4	2	6	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 7 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC	Pallet No. 7 DSC
Pedestal, Adj.	1	-	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	-
Roller, Landing	1	-	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	-	-
Support, Jack	2	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 8 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 7 DSC
Aid, Panel Erection	2	-	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-
Brace, Sway	-	-	2	2	2	3	3
Bracket Assy, Lifting	2	-	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	-	-
Curb	-	-	4	4	4	6	6
Deck	-	4	8	8	8	12	12
Girder, Cross Frame	2	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

Components Required	2E + 8 Bay DS						
	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 7 DSC
Girder, Launching Nose	1	-	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	-	-
Panel, Bottom	-	-	-	-	4	6	6
Panel, End Taper	-	-	2	2	-	-	-
Panel, Junction	-	-	2	2	-	-	-
Panel, Top	-	-	4	4	4	6	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 8 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 7 DSC
Pedestal, Adj.	1	-	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	-
Roller, Landing	1	-	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	-	-
Support, Jack	2	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 9 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC	Pallet No. 7 DSC
Aid, Panel Erection	2	-	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-
Brace, Sway	-	-	2	2	3	3	3
Bracket Assy, Lifting	2	-	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	-	-
Curb	-	-	4	4	6	6	6
Deck	-	4	8	8	12	12	12
Girder, Cross Frame	2	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 9 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC	Pallet No. 7 DSC
Girder, Launching Nose	1	-	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	-	-
Panel, Bottom	-	-	-	-	6	6	6
Panel, End Taper	-	-	2	2	-	-	-
Panel, Junction	-	-	2	2	-	-	-
Panel, Top	-	-	4	4	6	6	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 9 Bay DS						
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC	Pallet No. 7 DSC
Pedestal, Adj.	1	-	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	-
Roller, Landing	1	-	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	-	-
Support, Jack	2	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 10 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Aid, Panel Erection	2	-	-	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-	-
Brace, Sway	-	-	2	2	1	3	3	3
Bracket Assy, Lifting	2	-	-	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	-	-	-
Curb	-	-	4	4	2	6	6	6
Deck	-	4	8	8	4	12	12	12
Girder, Cross Frame	2	-	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 10 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Girder, Launching Nose	1	-	-	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	-	-	-
Panel, Bottom	-	-	-	-	2	6	6	6
Panel, End Taper	-	-	2	2	-	-	-	-
Panel, Junction	-	-	2	2	-	-	-	-
Panel, Top	-	-	4	4	2	6	6	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 10 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 1	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Pedestal, Adj.	1	-	-	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	-	-
Roller, Landing	1	-	-	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	-	-	-
Support, Jack	2	-	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 11 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Aid, Panel Erection	2	-	-	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-	-
Brace, Sway	-	-	2	2	2	3	3	3
Bracket Assy, Lifting	2	-	-	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	-	-	-
Curb	-	-	4	4	4	6	6	6
Deck	-	4	8	8	8	12	12	12
Girder, Cross Frame	2	-	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 11 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Girder, Launching Nose	1	-	-	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	-	-	-
Panel, Bottom	-	-	-	-	4	6	6	6
Panel, End Taper	-	-	2	2	-	-	-	-
Panel, Junction	-	-	2	2	-	-	-	-
Panel, Top	-	-	4	4	4	6	6	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 11 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC 2	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Pedestal, Adj.	1	-	-	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	-	-
Roller, Landing	1	-	-	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	-	-	-
Support, Jack	2	-	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 12 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Aid, Panel Erection	2	-	-	-	-	-	-	-
Adapter, Push Bar	1	-	-	-	-	-	-	-
Bar Assy, Launch	1	-	-	-	-	-	-	-
Beam Assy, Roller	2	-	-	-	-	-	-	-
Beam Assy, Bankseat	-	-	1	1	-	-	-	-
Brace, Sway	-	-	2	2	3	3	3	3
Bracket Assy, Lifting	2	-	-	-	-	-	-	-
Cable, Extractor	1	-	-	-	-	-	-	-
Curb	-	-	4	4	6	6	6	6
Deck	-	4	8	8	12	12	12	12
Girder, Cross Frame	2	-	-	-	-	-	-	-

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 12 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Girder, Launching Nose	1	-	-	-	-	-	-	-
Girder, Push Bar	1	-	-	-	-	-	-	-
Marker, Guide	-	-	-	-	-	-	-	-
Nose Assy, Launching	6	-	-	-	-	-	-	-
Nose, Light, Front	1	-	-	-	-	-	-	-
Nose, Light, Rear	1	-	-	-	-	-	-	-
Panel, Bottom	-	-	-	-	6	6	6	6
Panel, End Taper	-	-	2	2	-	-	-	-
Panel, Junction	-	-	2	2	-	-	-	-
Panel, Top	-	-	4	4	6	6	6	6

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Load (Cont).

	2E + 12 Bay DS							
Components Required	Pallet No. 1 ED	Pallet No. 2 LR/D	Pallet No. 3 EOB 1	Pallet No. 4 EOB 2	Pallet No. 5 DSC	Pallet No. 6 DSC	Pallet No. 7 DSC	Pallet No. 8 DSC
Pedestal, Adj.	1	-	-	-	-	-	-	-
Plate, Base DS	4	-	-	-	-	-	-	-
Post Assy, Jack	2	-	-	-	-	-	-	-
Post, Launching Nose	2	-	-	-	-	-	-	-
Ramp, Long	-	12	-	2	-	-	-	-
Roller, Landing	1	-	-	-	-	-	-	-
Roller, Launching Nose	1	-	-	-	-	-	-	-
Seat, Building Frame	4	-	-	-	-	-	-	-
Support Assy, Adj.	4	-	-	-	-	-	-	-
Support, Jack	2	-	-	-	-	-	-	-

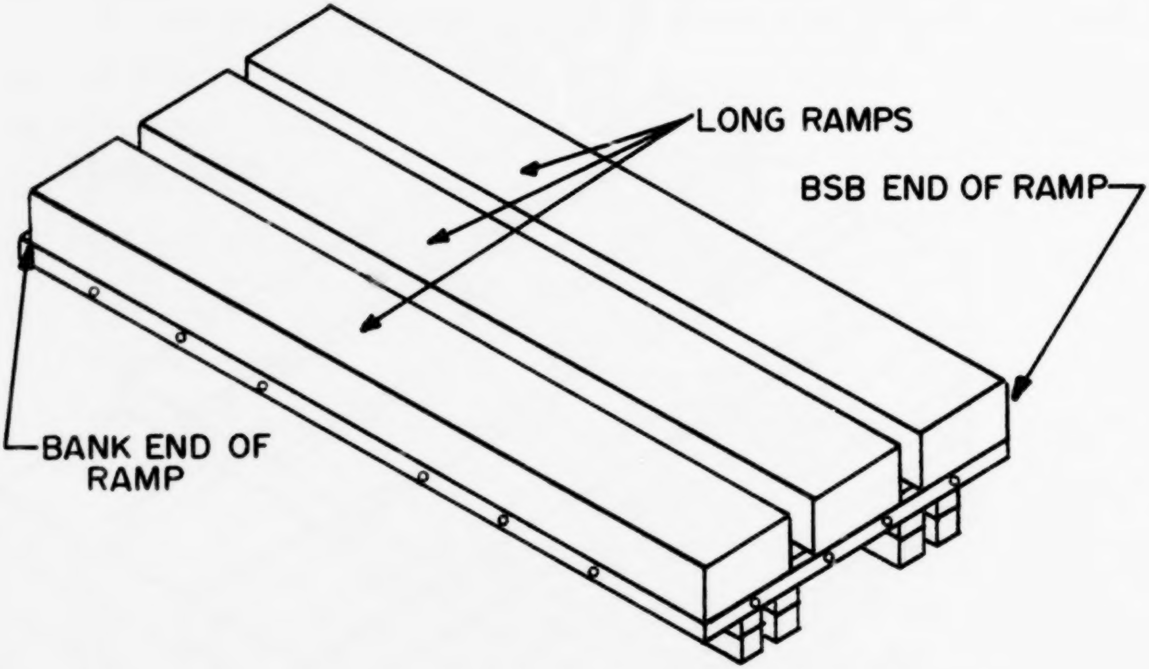
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) Loading Parts on Pallets.

(a) Pallet Load LR/D.

Step 1. Place 3 long ramps on the pallet.



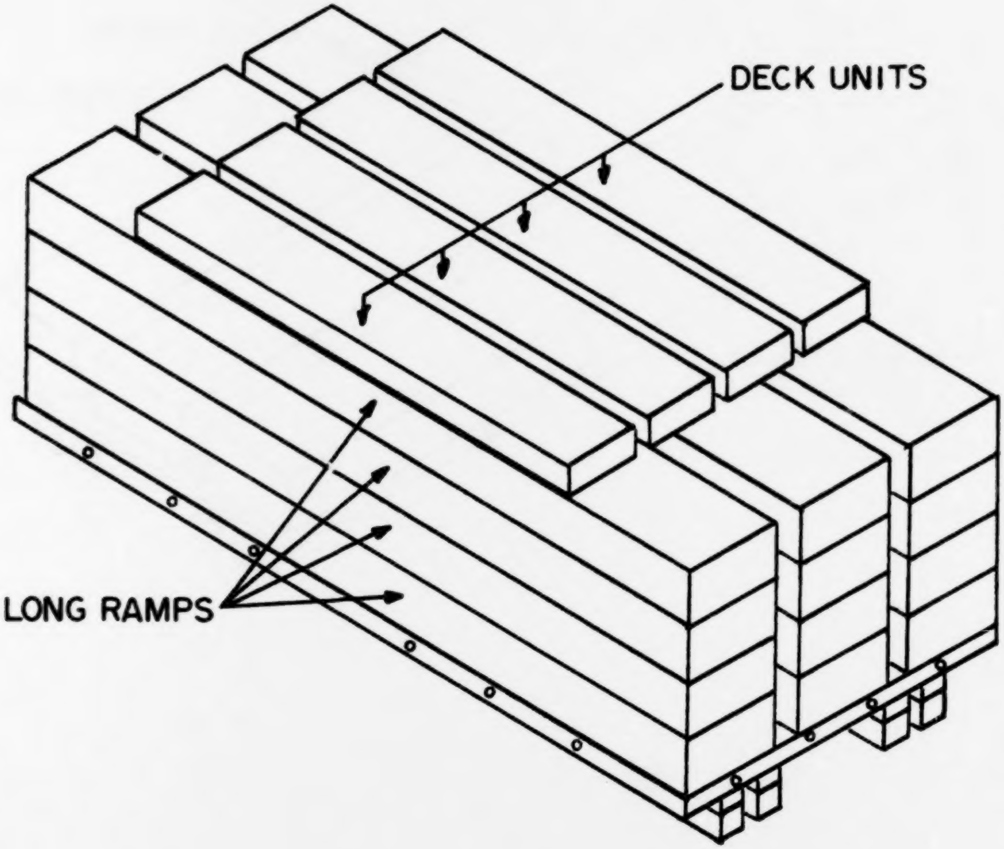
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (a) Pallet Load LR/D.

Step 2. Stack 3 long ramps on top of the ramps placed on the pallet in Step 1. Ensure that the ramps are stacked as neatly as possible using the stacking lugs and recesses for correct alignment.

Step 3. Place 4 deck units on top of the ramp sections.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (a) Pallet Load LR/D.

Step 4. Secure load with ten 10,000 lb. cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

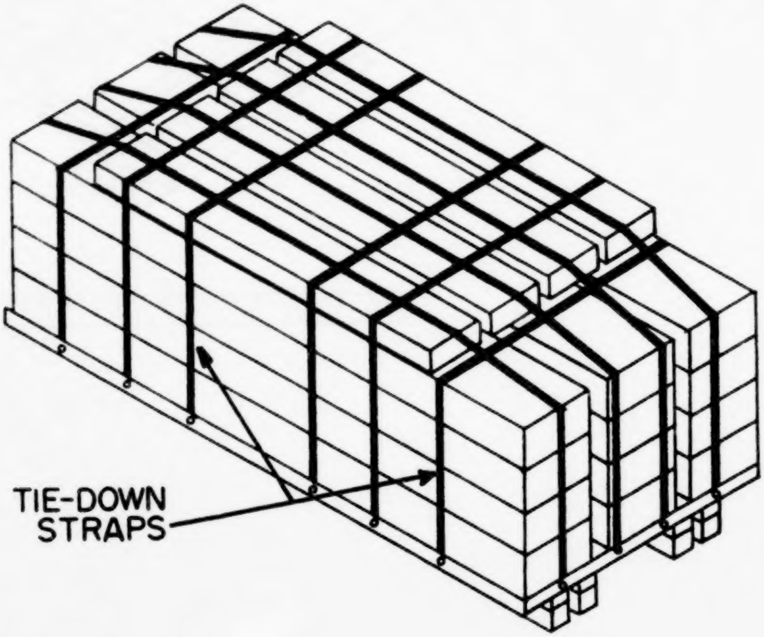
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

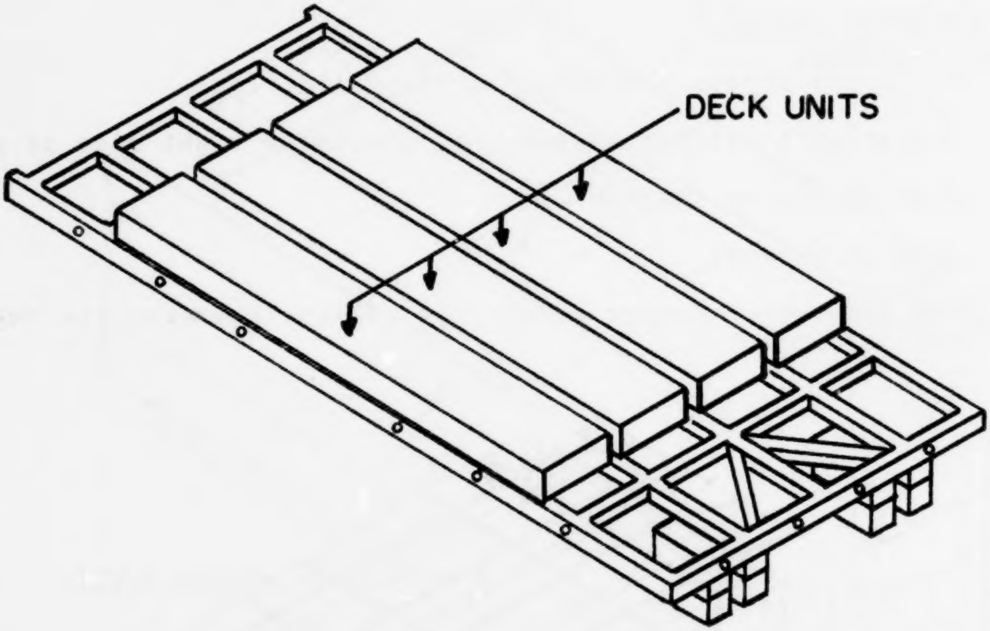
d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads DSC, EOB1 and EOB2.

Step 1. Place 4 deck units on the pallet as shown.

a. Outside deck units are placed with edge flush with the side of the pallet.

b. Center deck units are spaced approximately 3 in (7.6 cm) apart.

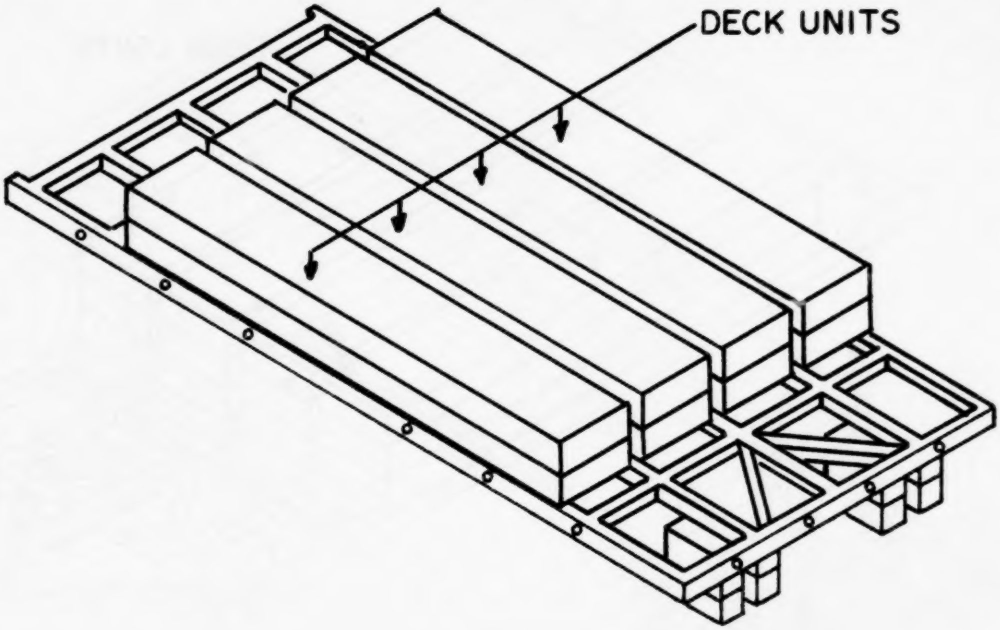


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads DSC, EOB1 and EOB2.

Step 2. Place 4 deck units on top of the 4 deck units loaded in Step 1. Ensure that stacking lugs and recesses are used for correct alignment.



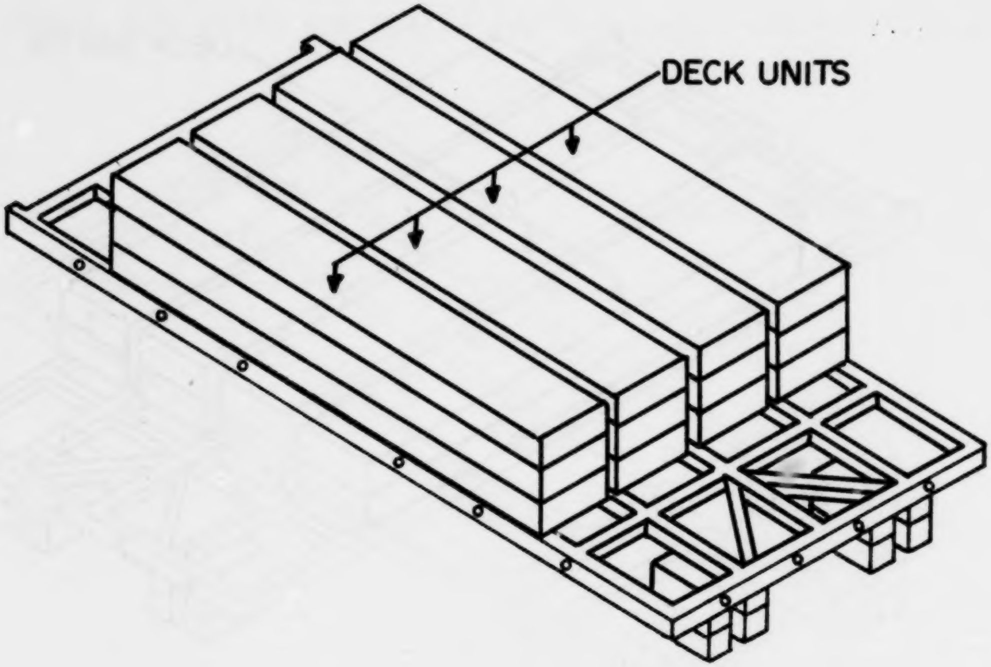
For EOB1 and EOB2 PROCEED TO STEP 9.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Load DSC.

Step 3. Place 4 deck units on top of the 4 deck units loaded in Step 2. Ensure that stacking lugs and recesses are used for correct alignment.

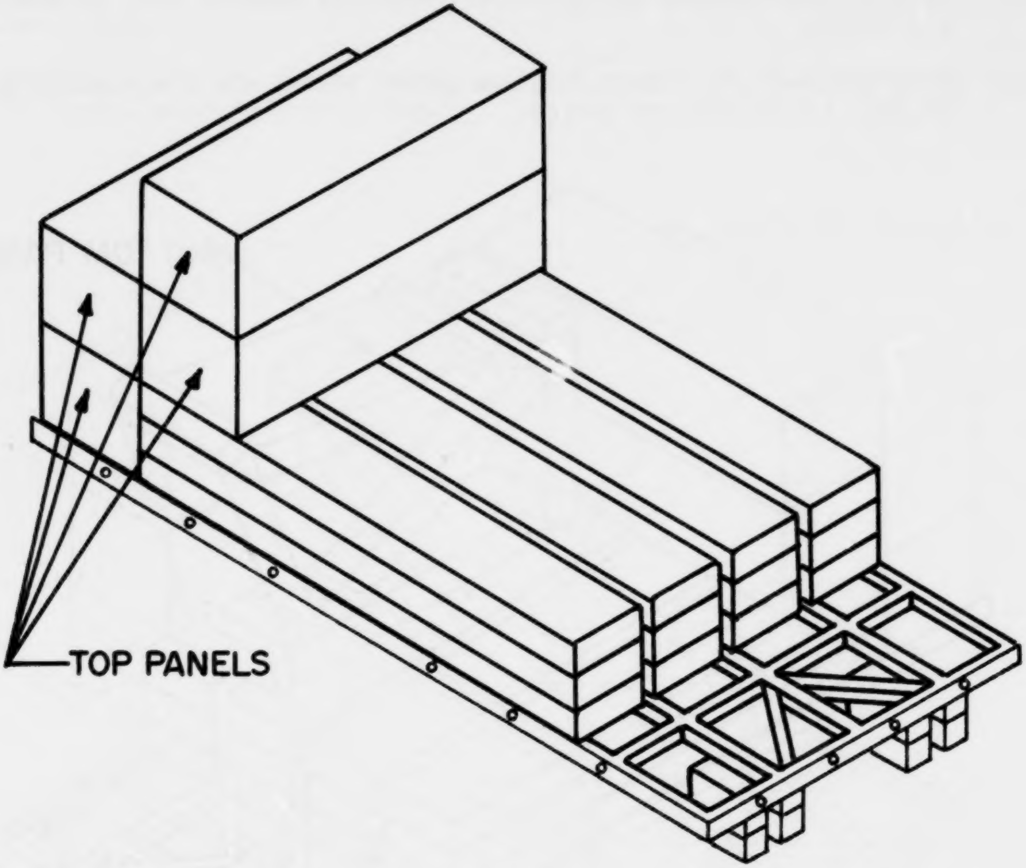


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Load DSC

Step 4. Place 4 top panels across the front of the pallet and on top of the deck units.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

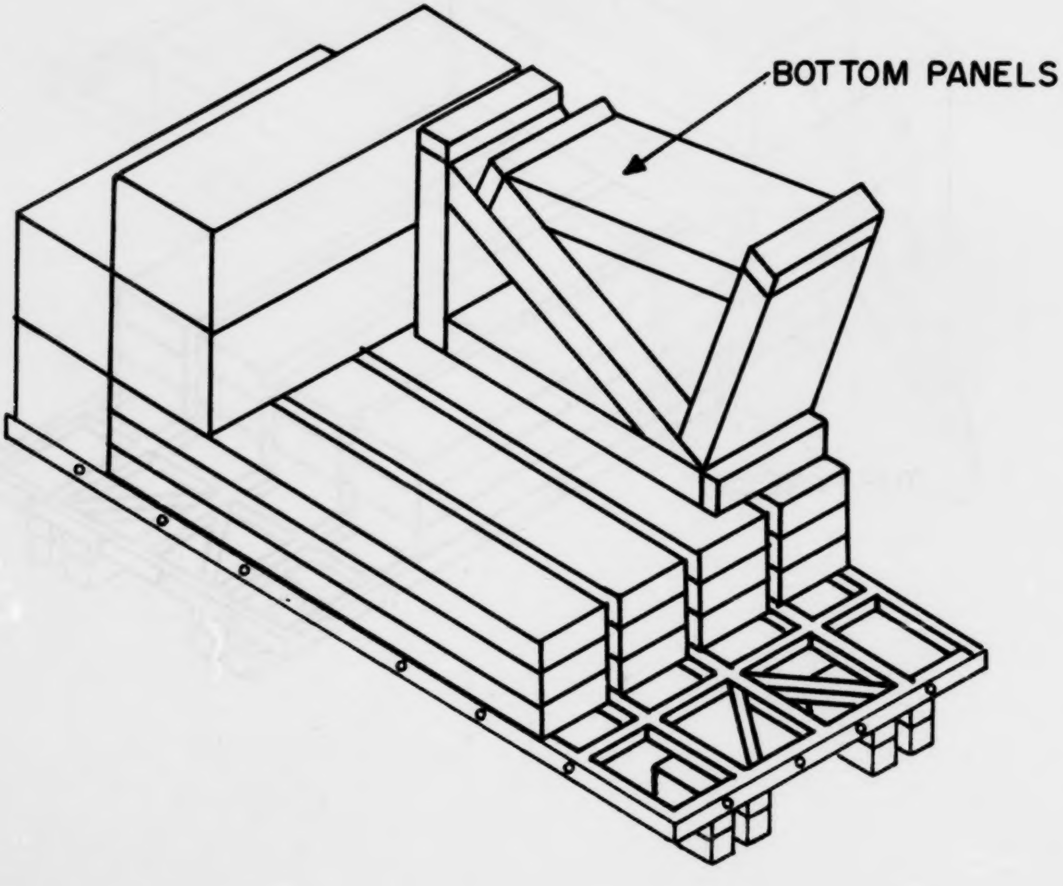
d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Load DSC.

Step 5. Stack 1 bottom panel on top of another bottom panel and position the panels on the deck units as shown.

a. Ensure that shoot bolts of the bottom panels are in the closed position.

b. Ensure that the upper bottom panel rests in the stacking lugs of the lower bottom panel.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

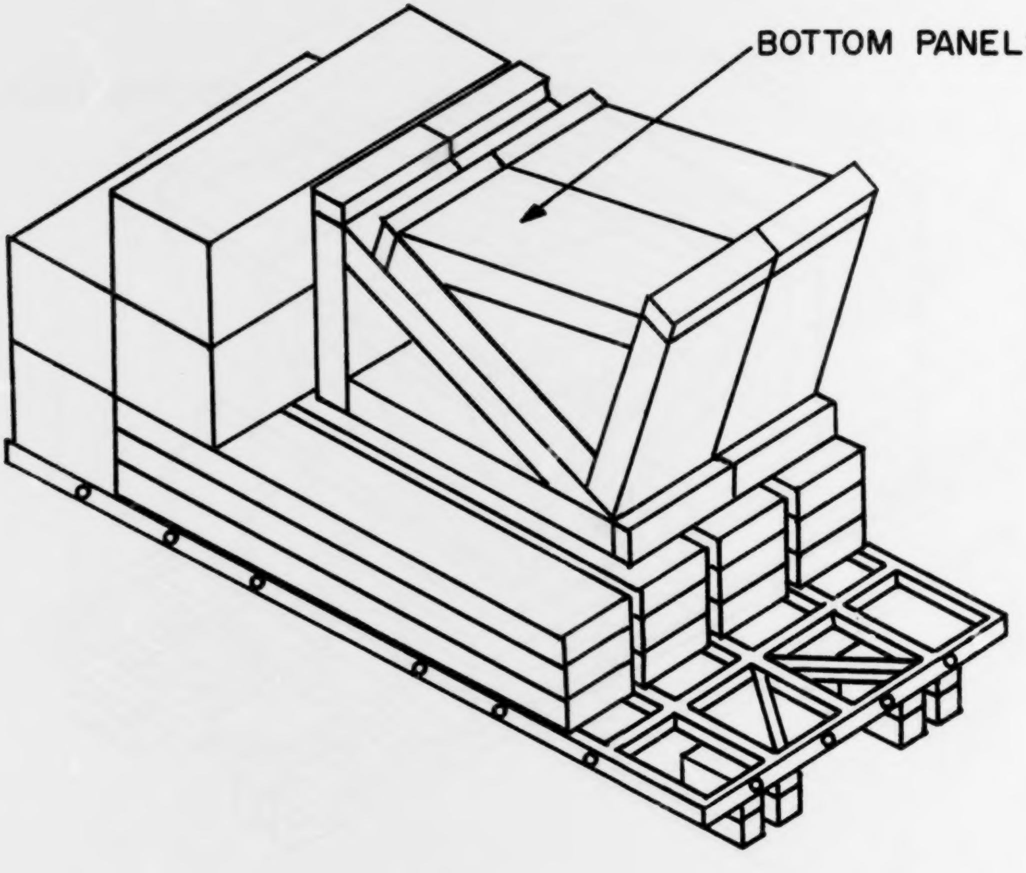
d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Load DSC.

Step 6. Stack 1 bottom panel on top of another bottom panel and position panels on the deck units as shown.

a. Ensure that shoot bolts of the bottom panels are in the closed position.

b. Ensure that the upper bottom panel rests in the stacking lugs of the lower bottom panel.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

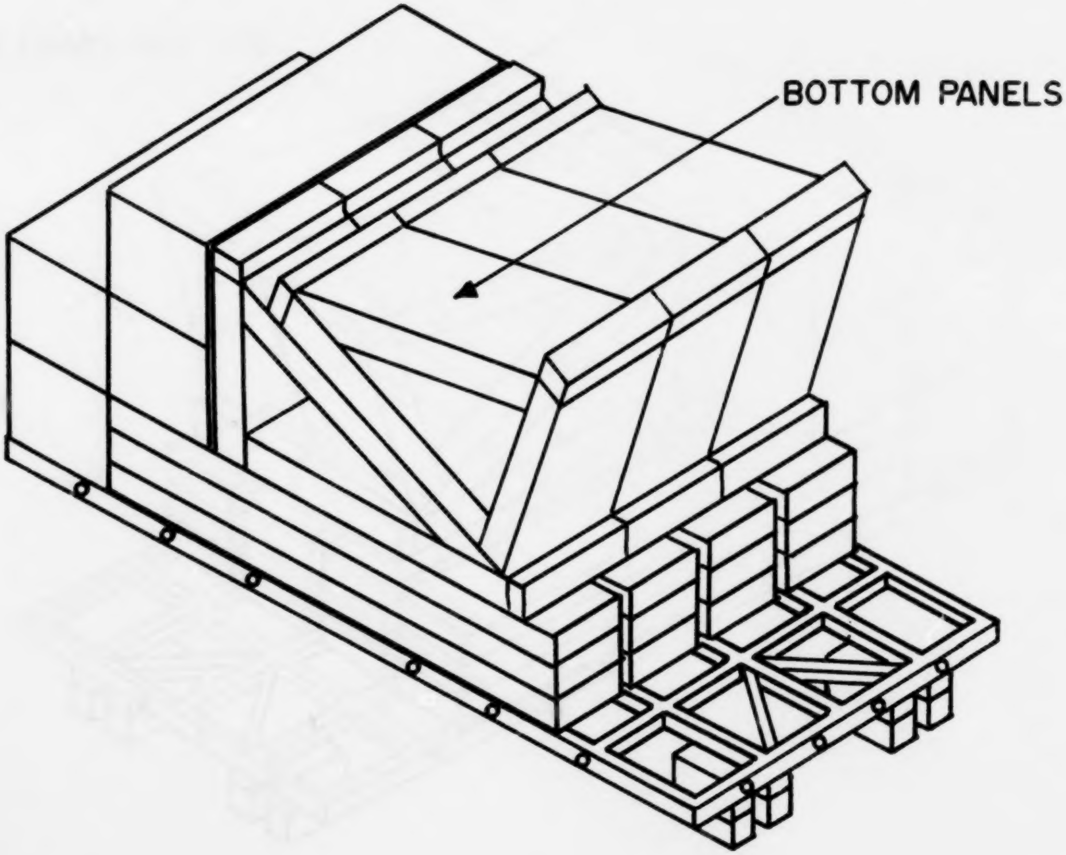
d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Load DSC

Step 7. Stack 1 bottom panel on top of another bottom panel and position panels on the deck units as shown.

a. Ensure that shoot bolts of the bottom panels are in the closed position.

b. Ensure that the upper bottom panel rests in the stacking lugs of the lower bottom panel



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

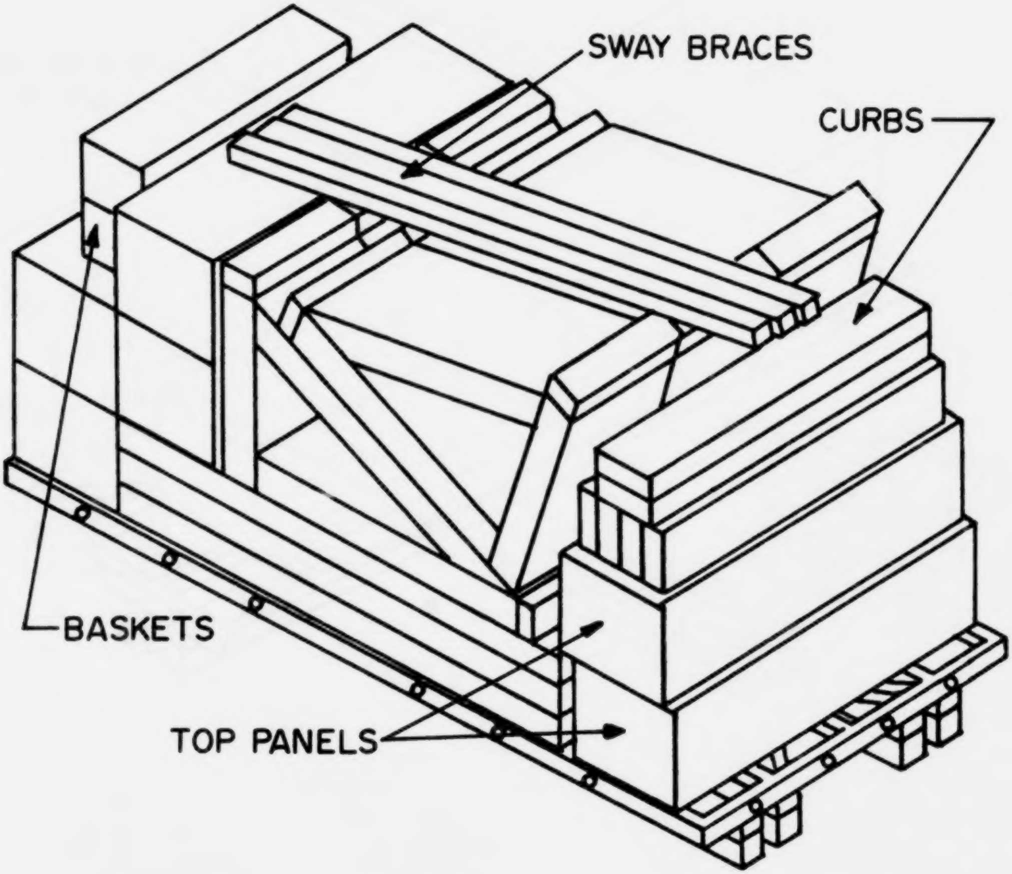
(6) (b) Pallet Load DSC.

Step 8. Stack 2 top panels across the rear of the pallet.

Step 9. Stack 6 curbs on top of the top panels.

Step 10. Place 3 sway braces on top of the center stack of bottom panels.

Step 11. Stack 2 baskets on top of the front set of top panels.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

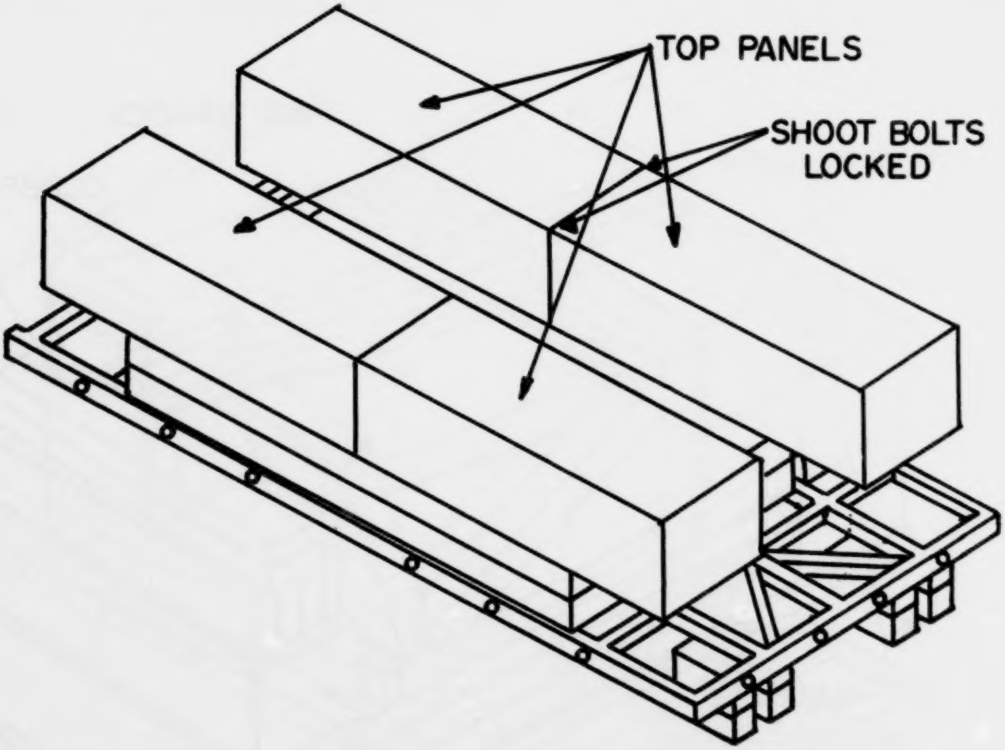
d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads EOB1 and EOB2.

Step 12. Place 4 top panels on top of the deck units.

a. Ensure that shoot bolts are put in the locked position after panels are butted together.

b. Center top panels over deck units.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

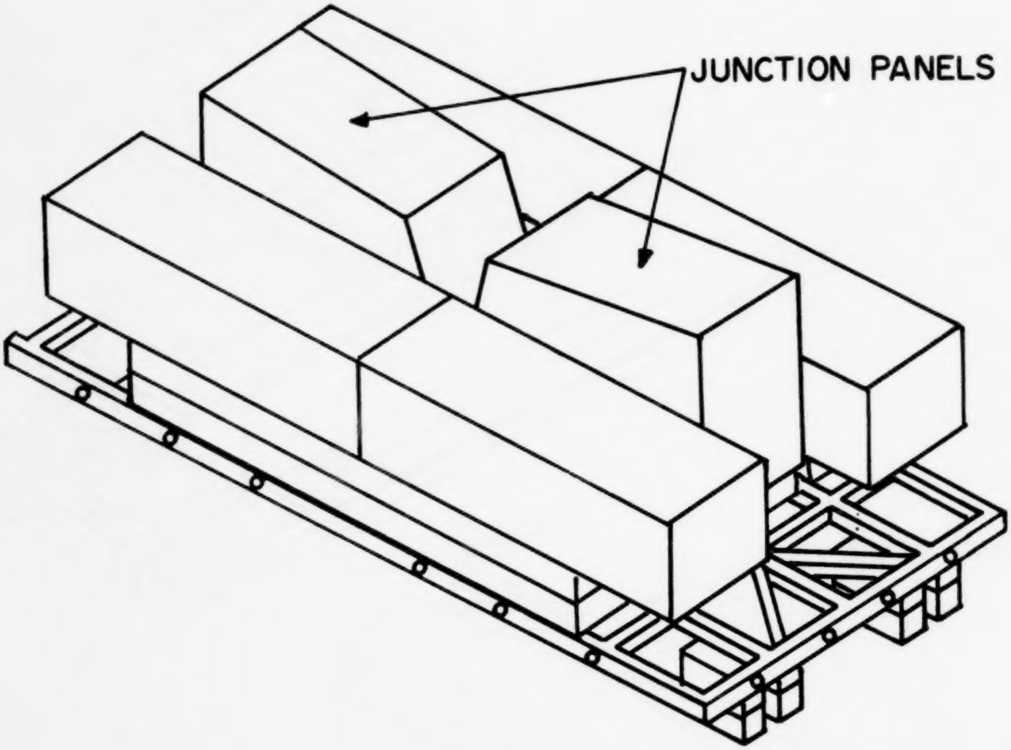
d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads EOB1 and EOB2.

Step 13. Place 2 junction panels on the deck units between the top panels.

a. The long side of the junction panels will be down on the deck units.

b. The bottom of the junction panels will be facing each other.



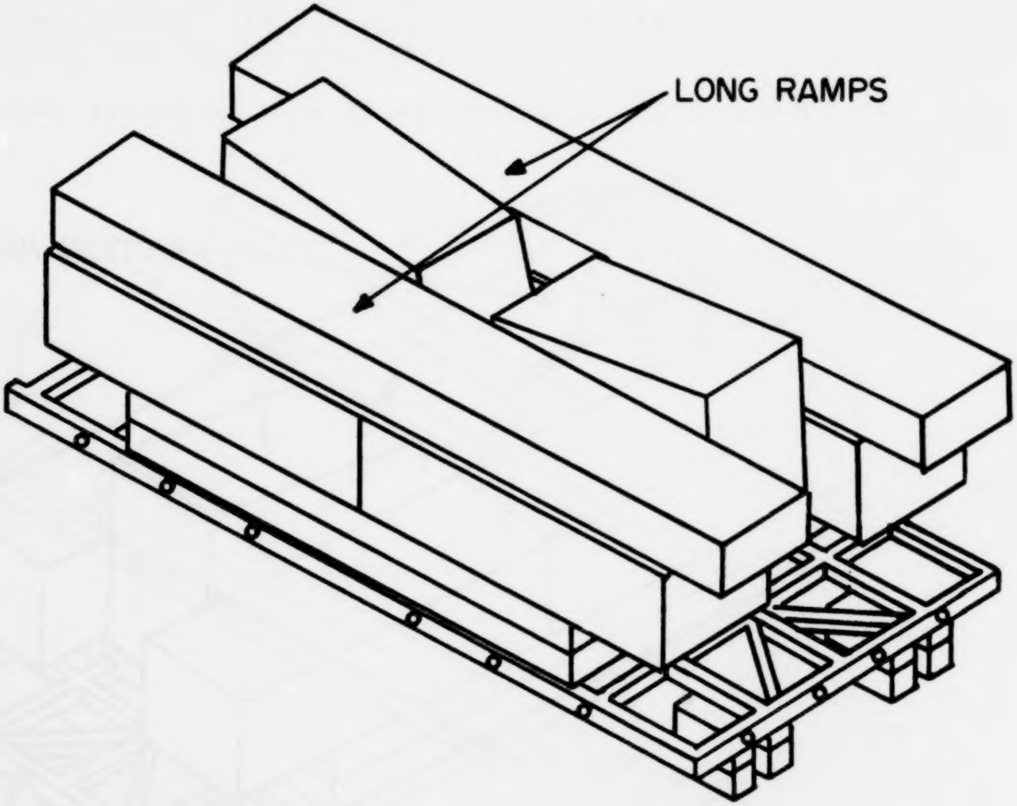
For EOB2 PROCEED TO STEP 15.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Load E0B1.

Step 14. Place 2 long ramps on top of the top panels.

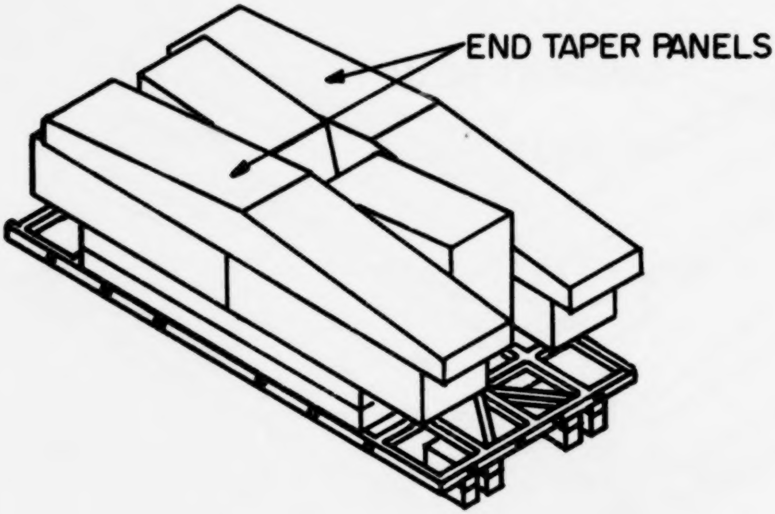


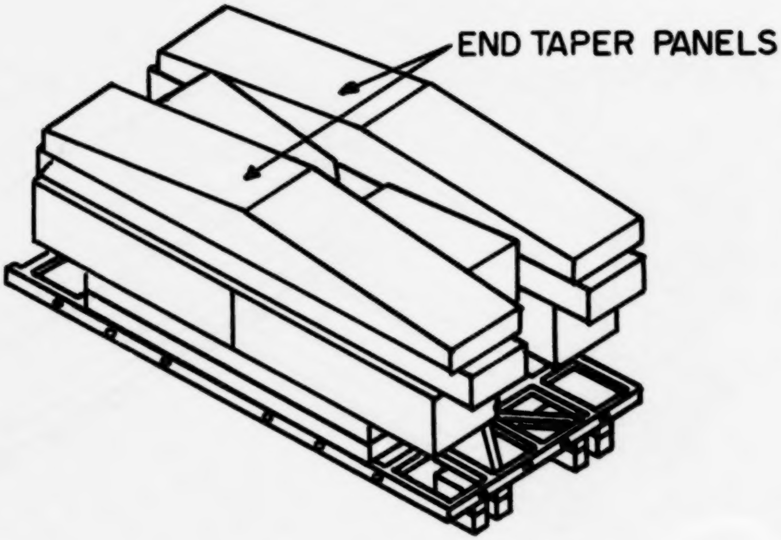
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads EOB1 and EOB2.

Step 15. Place 2 end taper panels on top of the long ramps.



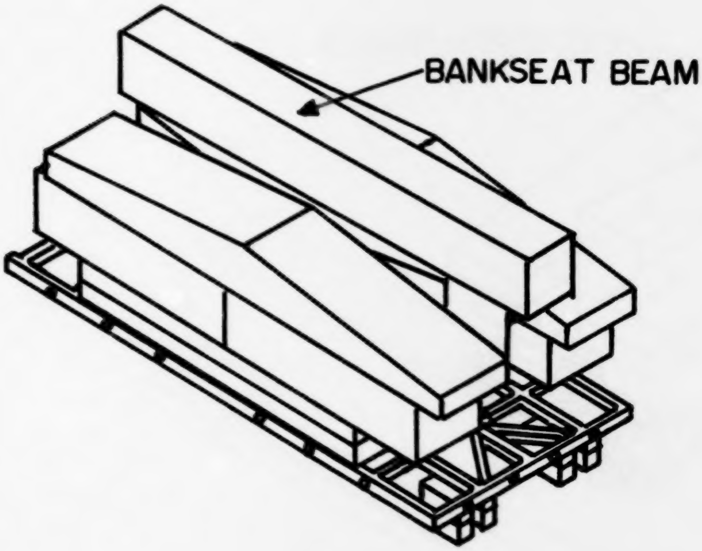


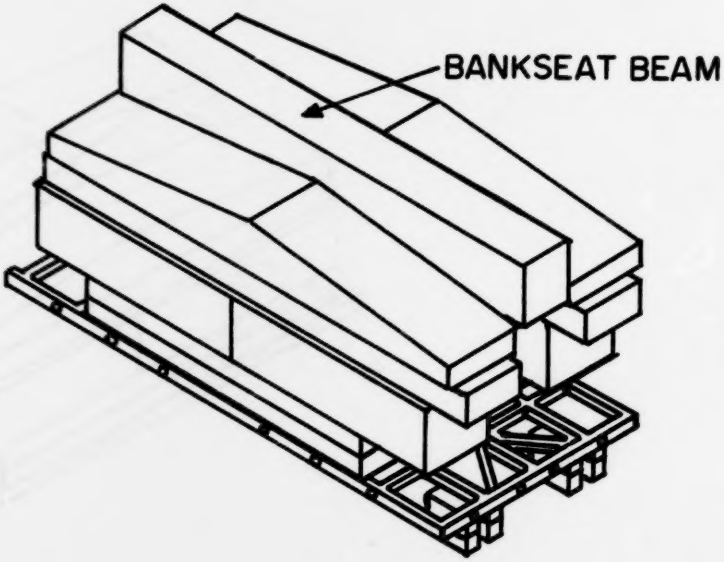
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads EOB1 and EOB2.

Step 16. Place 1 bankseat beam on top of the junction panel. Ensure that inside of beam faces down.



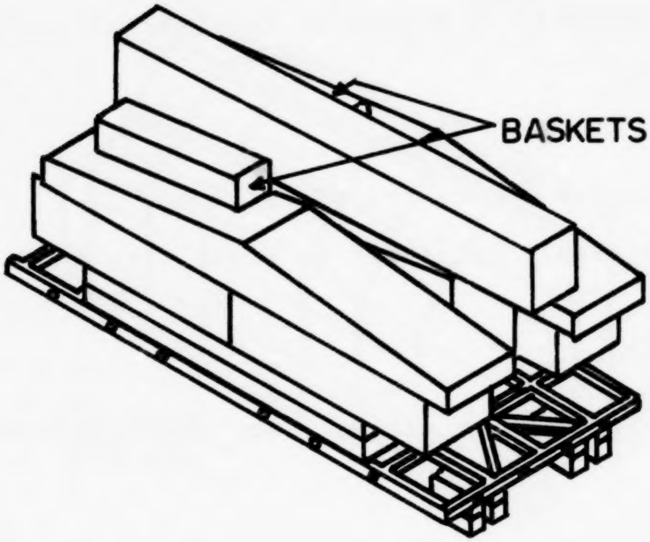


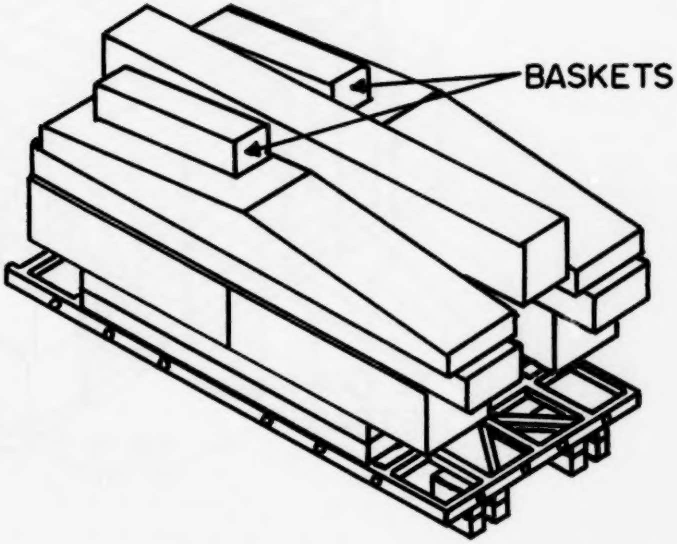
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads EOB1 and EOB2.

Step 17. Place 2 baskets on top of the end taper panels near the front of pallet load.





2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads DSC, EOB1 and EOB2.

Step 18. Secure load with ten 10,000 lb cargo tie-down straps.

a. Place four straps across the pallet load.

b. The strap's ratchet assembly is placed to the rear of pallet.

c. Hook straps to shackle.

d. Tighten straps.

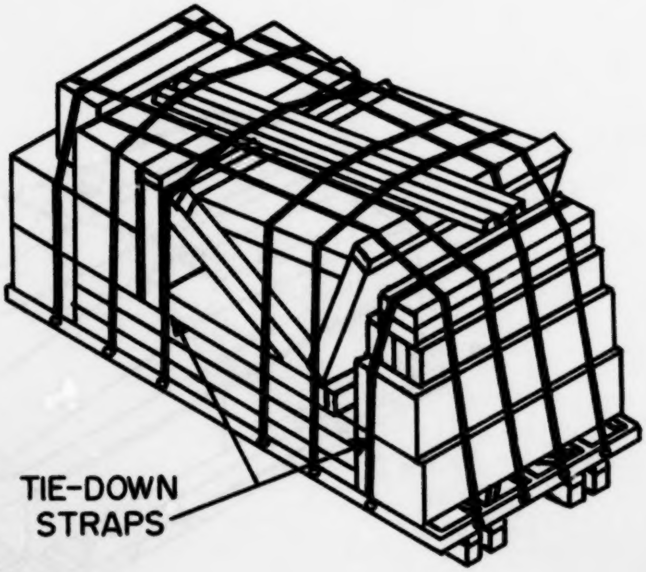
e. Place six straps crosswise across the pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackle.

h. Tighten straps.

i. Tie the rubber bumper across the pallet loads near the rear of the pallet.

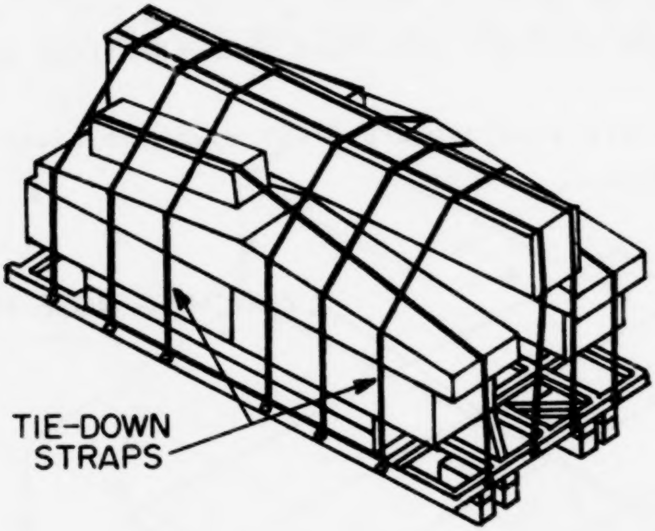


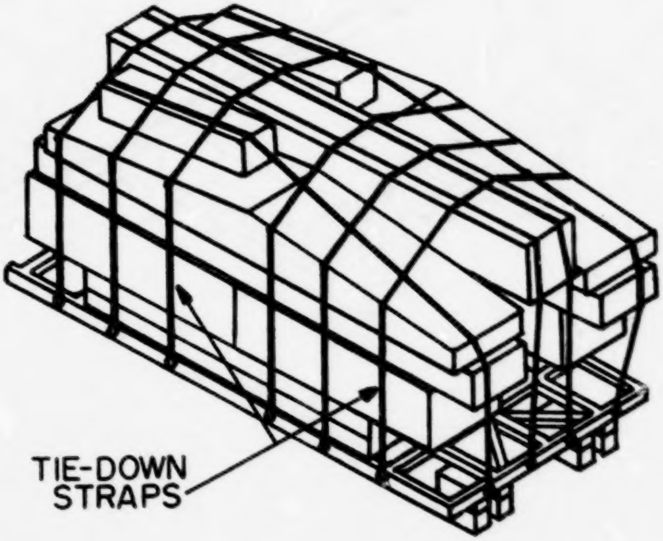
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (b) Pallet Loads DSC, EOB1 and EOB2 (Cont).

Step 18. (Cont).





2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

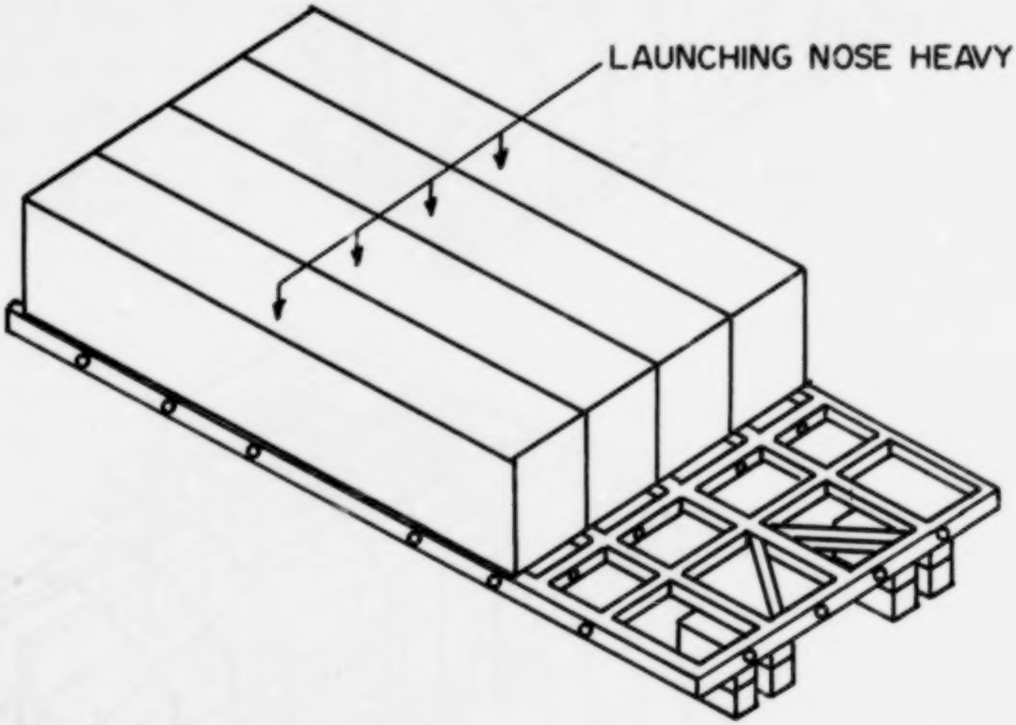
(6) Loading Parts on Pallets.

(c) Pallet Load ED.

Step 1. Place 4 launching nose heavy sections on the pallet as shown.

a. Front end of nose sections are flush with the front edge of pallet.

b. Sides of outer nose sections are flush with the sides of pallet.



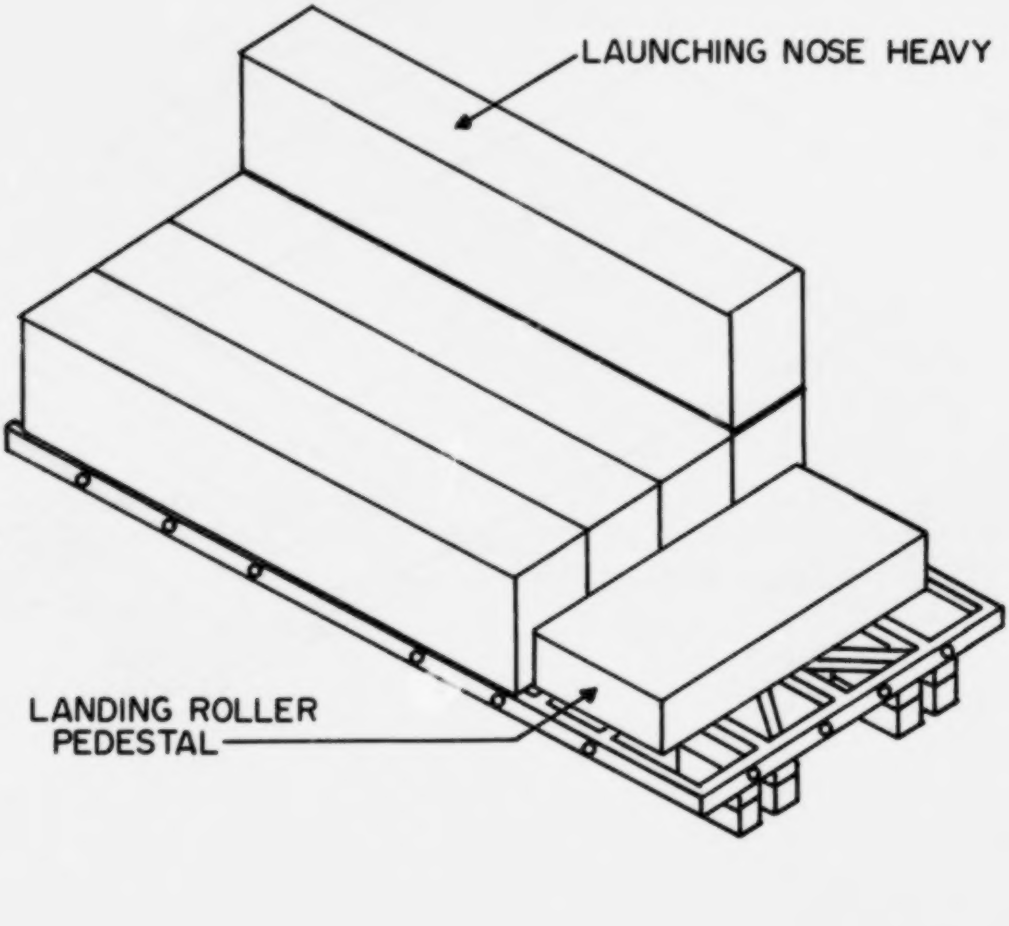
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 2. Place 1 launching nose heavy section on top of the nose section on the right side of the pallet.

Step 3. Place 1 landing roller pedestal on the rear of the pallet and against the rear of the nose sections.

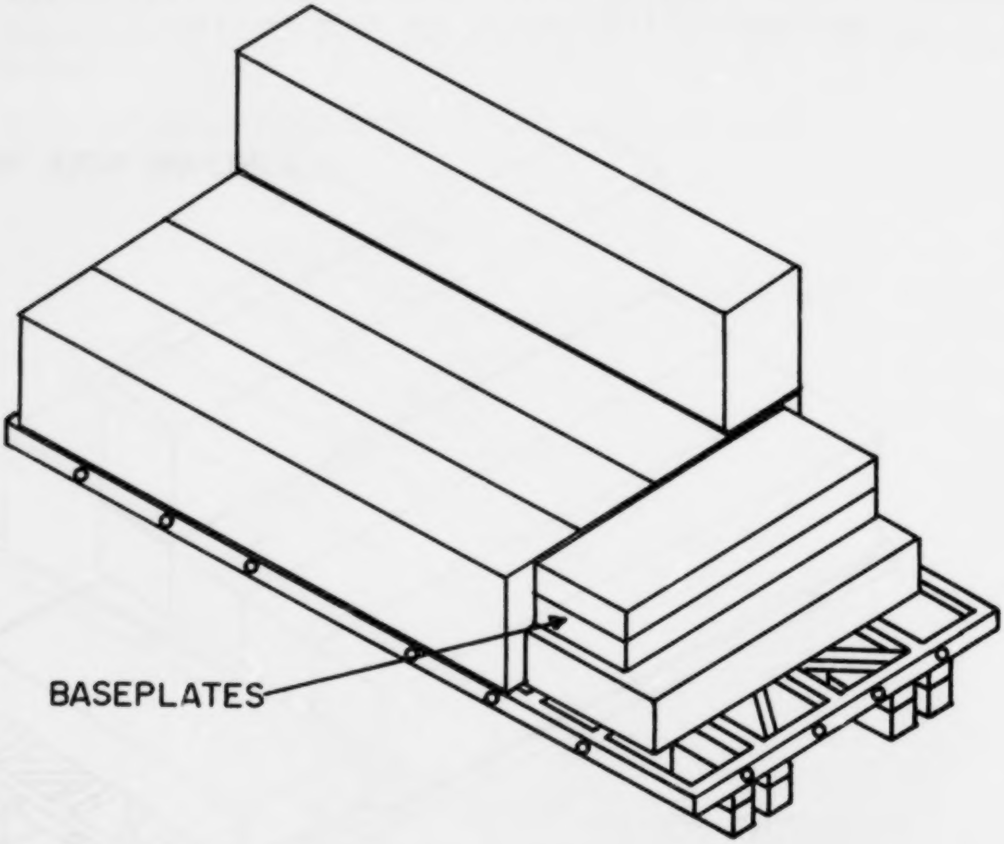


2-12. PALLET LOADS OF BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED

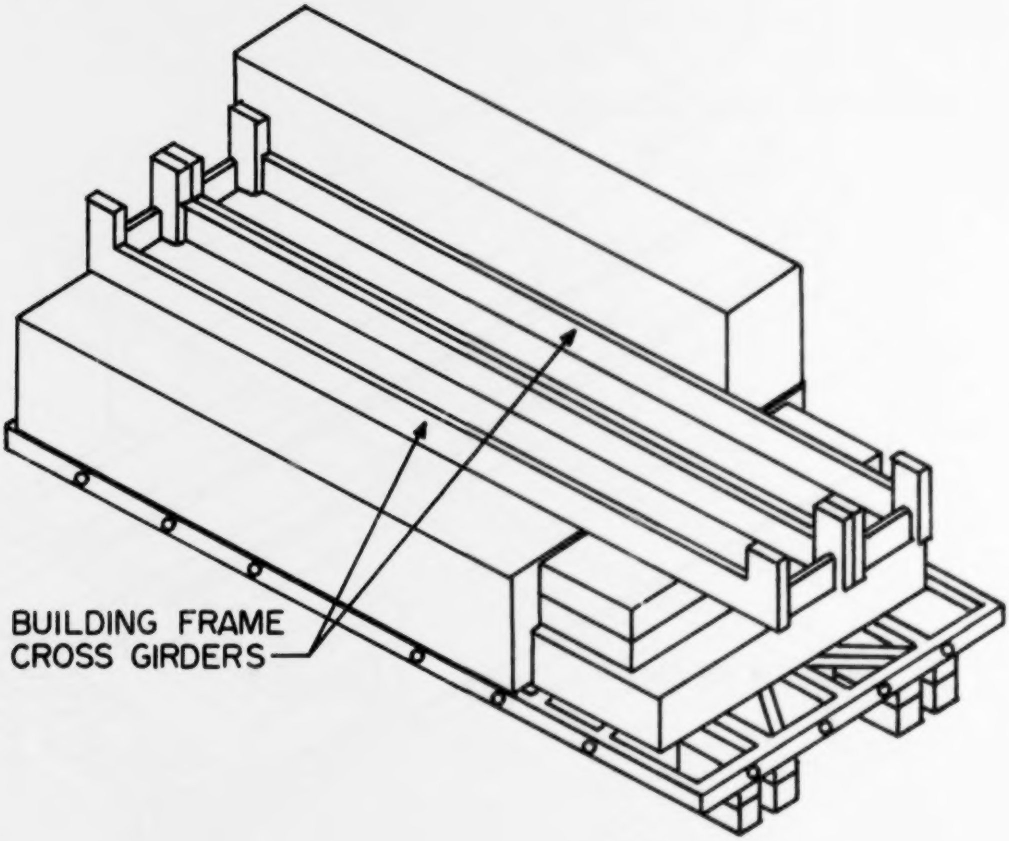
Step 4. Place 2 baseplates on top of the landing roller pedestal.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

Step 5. Place 2 building frames cross girders on top of the 2 center nose sections. The front of the cross girder is flush with the front of the nose sections.

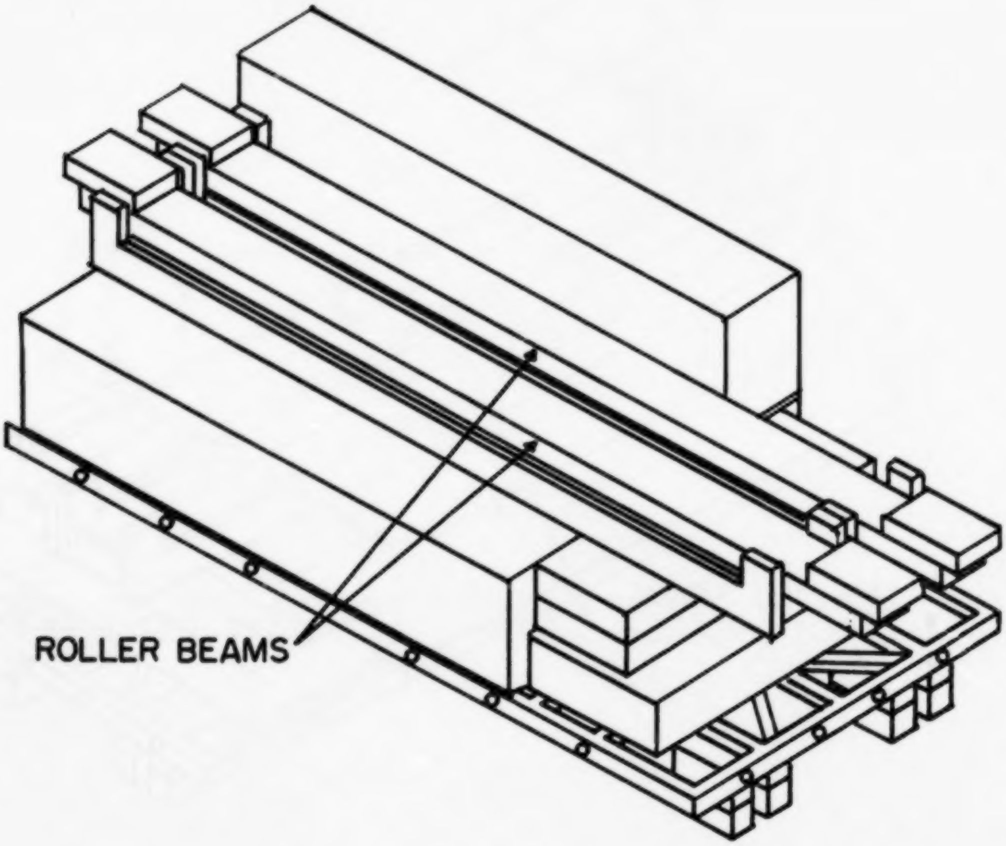


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 6. Place 2 roller beams into cross girders. Front end of roller beams will extend slightly forward of the ends of the cross girders.

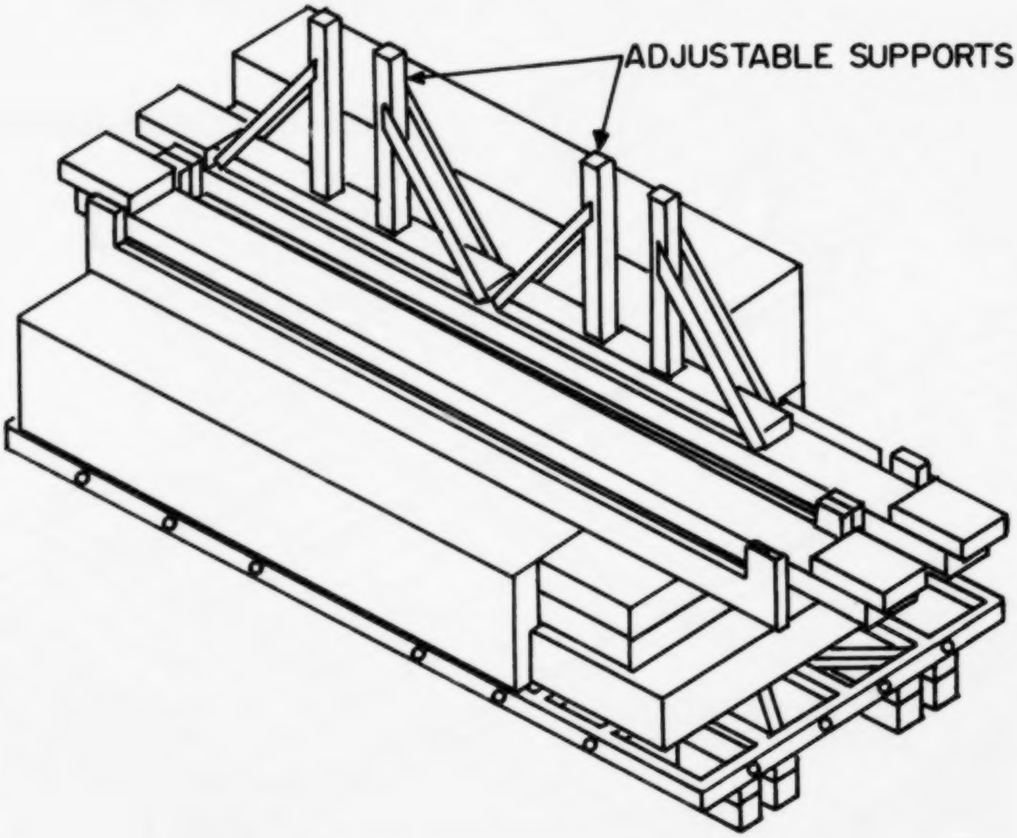


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 7. Place 2 adjustable supports on top of the roller beam. These supports will rest against the heavy nose section on the right side of the load.



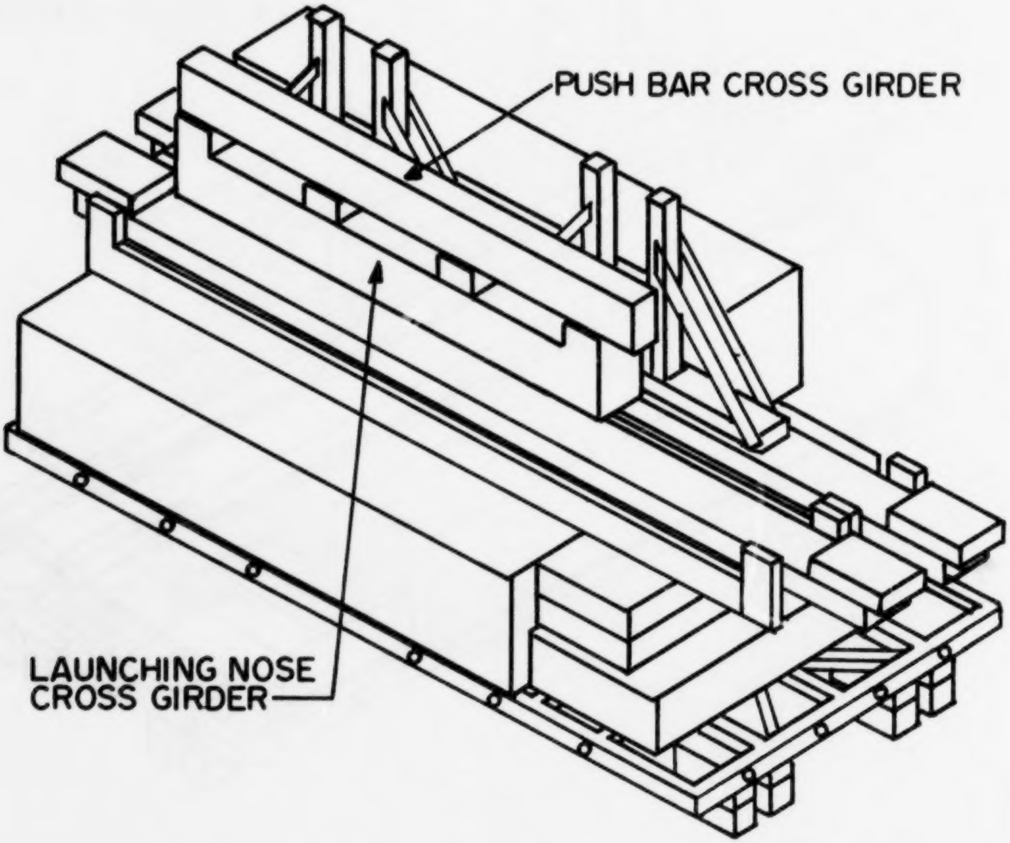
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 8. Place 1 launching nose cross girder next to the adjustable supports.

Step 9. Place 1 push bar cross girder on top of the launching nose cross girder.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

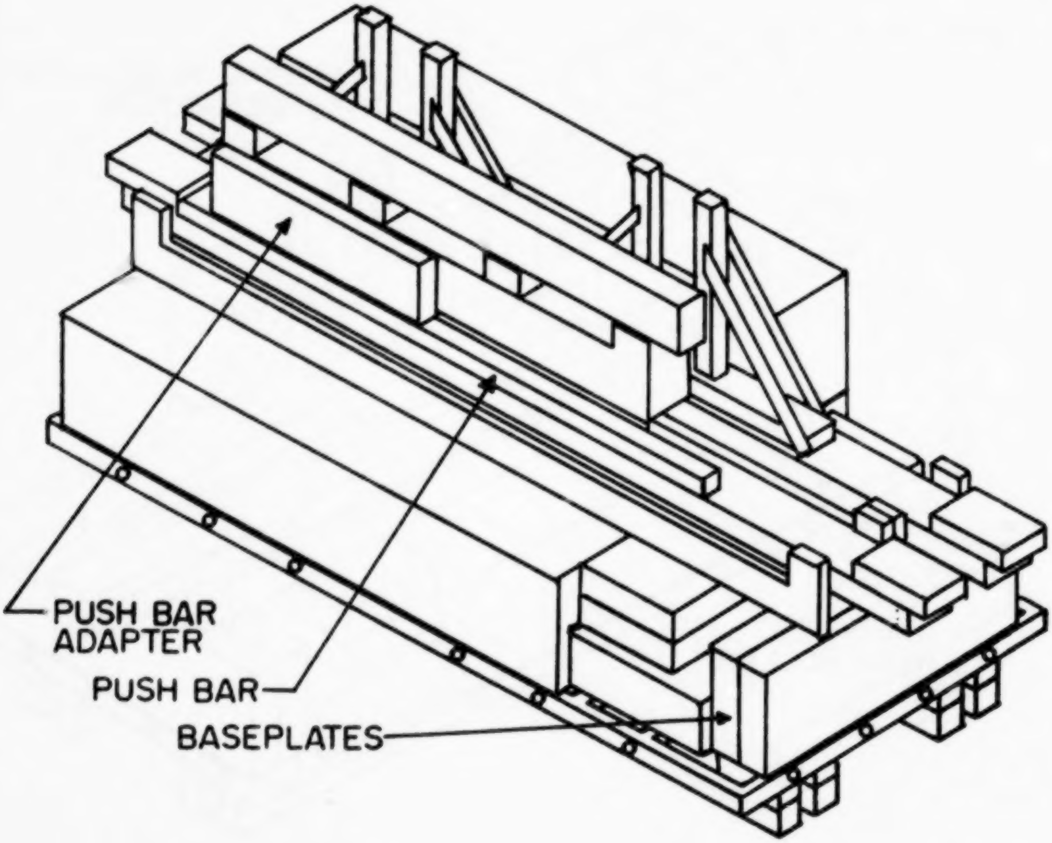
d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 10. Place 1 push bar next to the launching nose cross girder.

Step 11. Place 1 push bar adapter on top of the push bar.

Step 12. Place 2 baseplates across the rear of the pallet. The tops of the baseplates must face each other.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

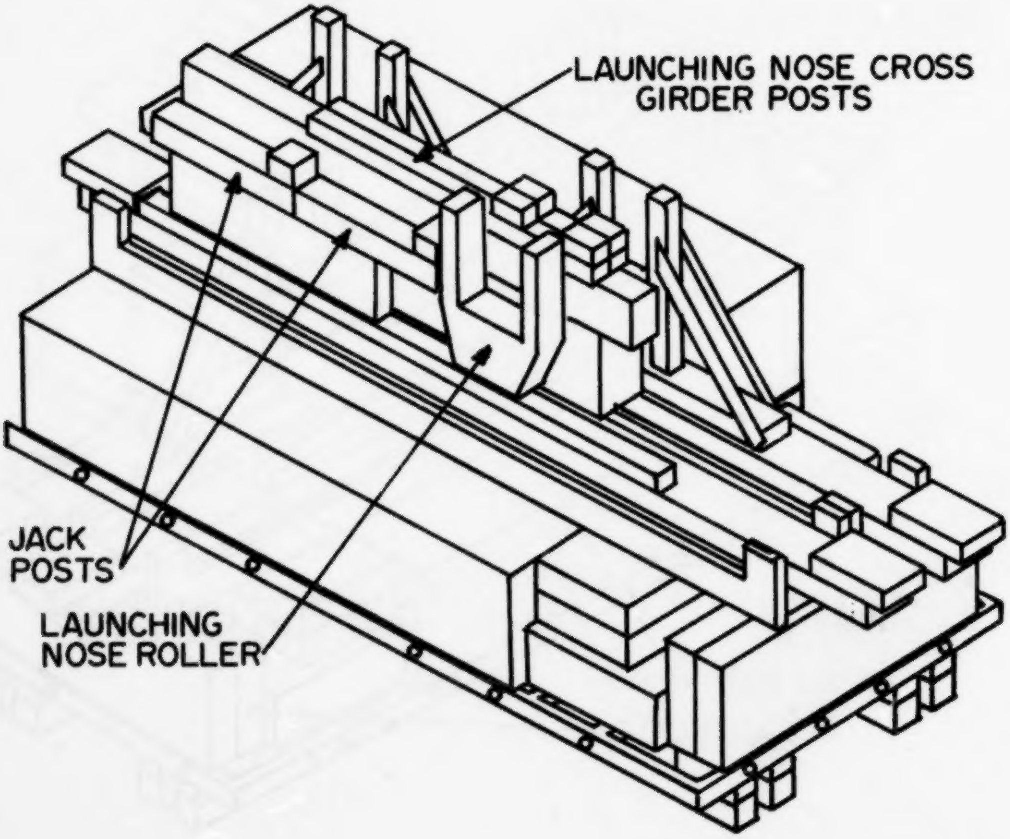
d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 13. Place 2 launching nose cross girder posts on top of the push bar cross girder.

Step 14. Place 2 jack posts on top of the push bar adapter.

Step 15. Place 1 launching nose roller on top of the push bar. The nose roller is placed in the vertical position.



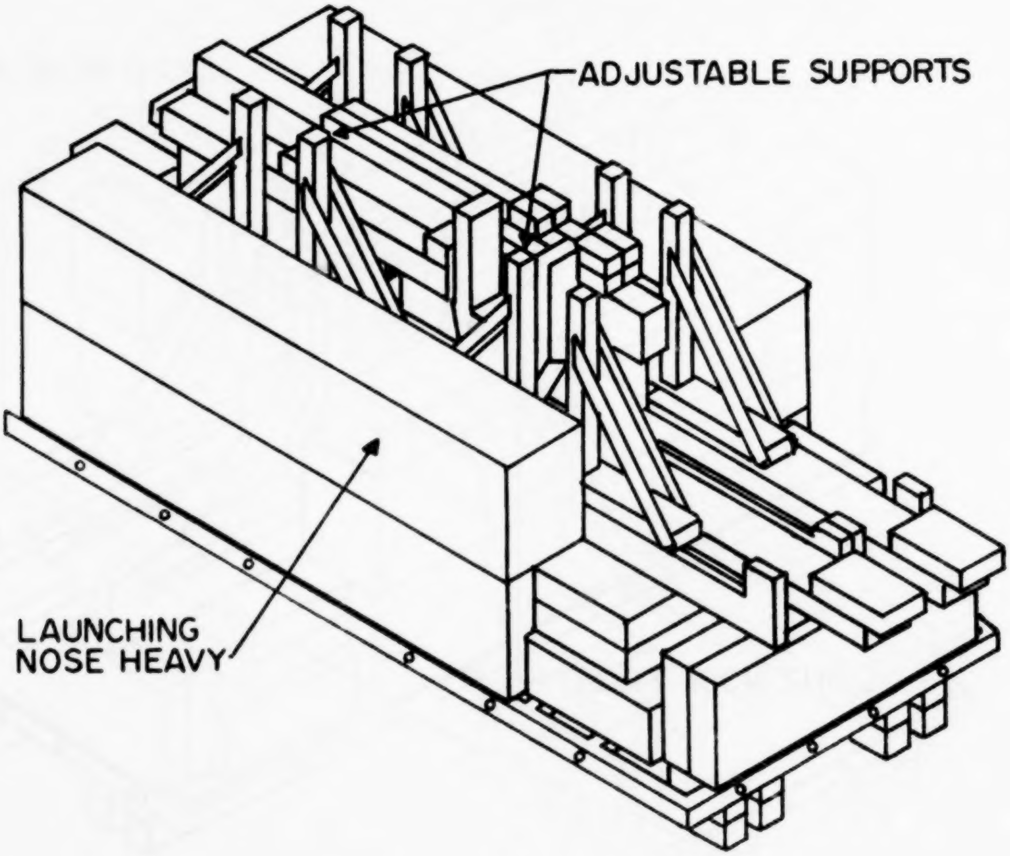
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 16. Place 1 launching nose heavy on top of the nose section on the left side of the pallet.

Step 17. Place 2 adjustable supports on top of the roller beam next to the nose section.



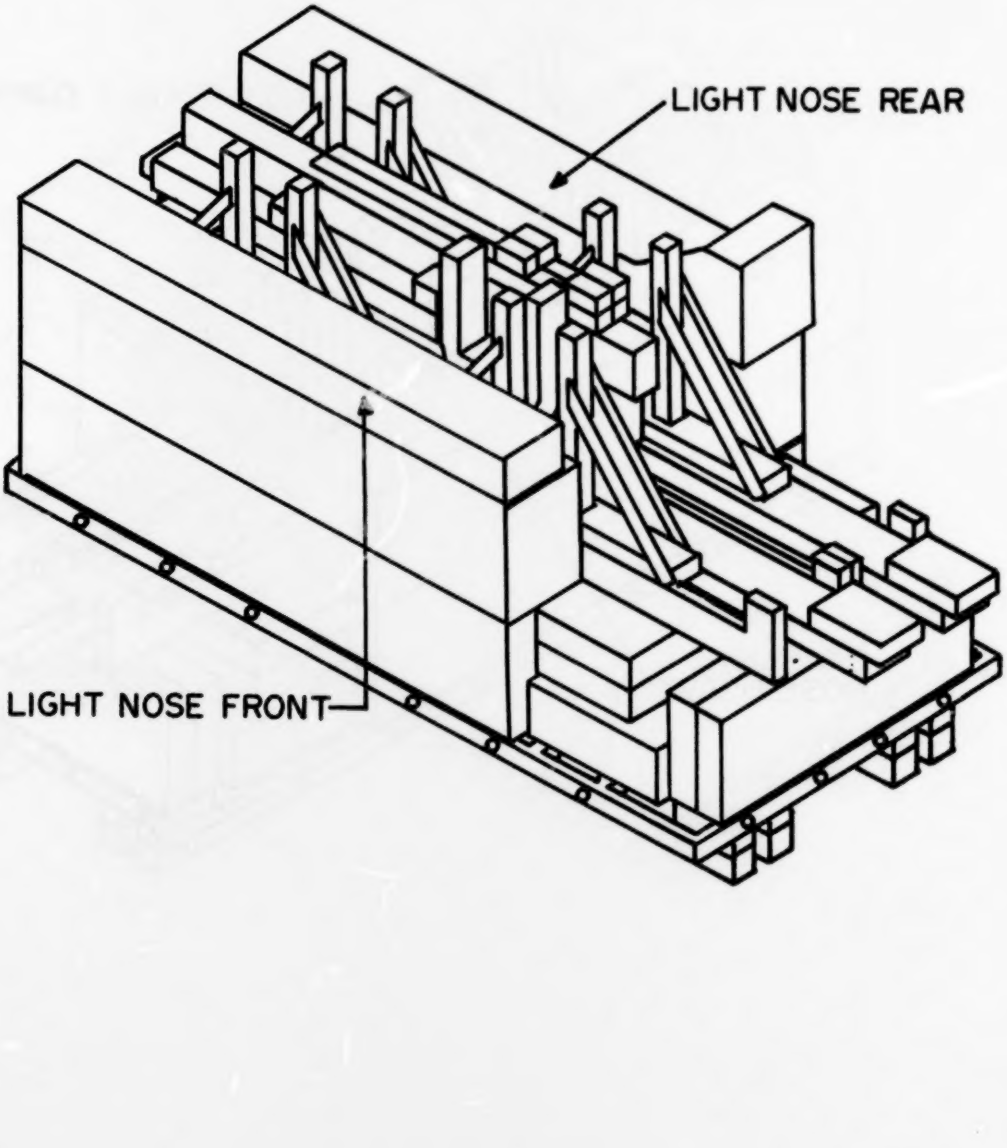
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 18. Place 1 light nose front section on top of the heavy nose section on the left side of the load.

Step 19. Place 1 light nose rear section on top of the heavy nose section on the right side of the load.



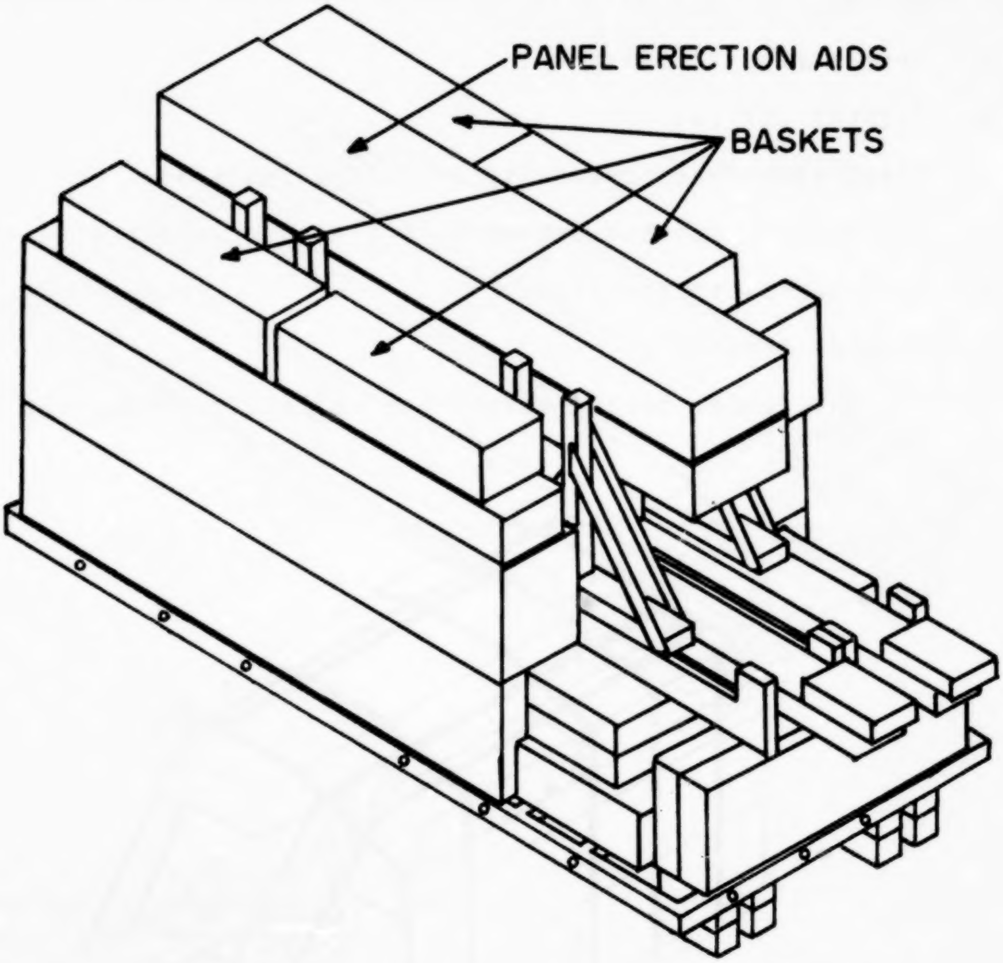
2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 20. Place 2 panel erection aids on top of the small parts between the adjustable supports.

Step 21. Place 4 baskets on top of the light nose sections.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (c) Pallet Load ED.

Step 22. Secure load with ten 10,000 lb cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

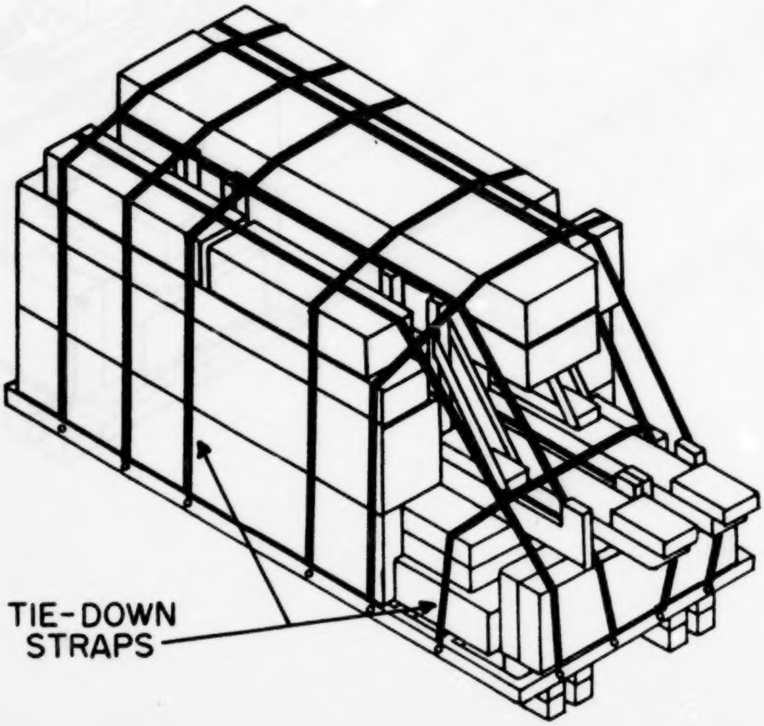
e. Place six straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

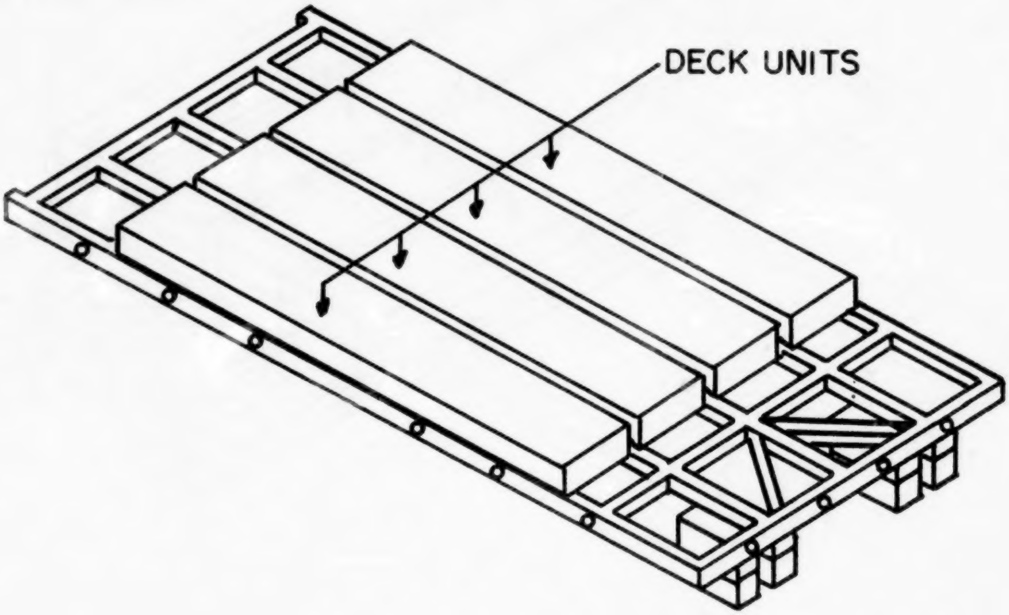
d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 1. Place 4 deck units on the pallet as shown.

a. Outside deck units are placed with edge flush with the side of the pallet.

b. Center deck units are spaced approximately 3 in (7.6 cm) apart.



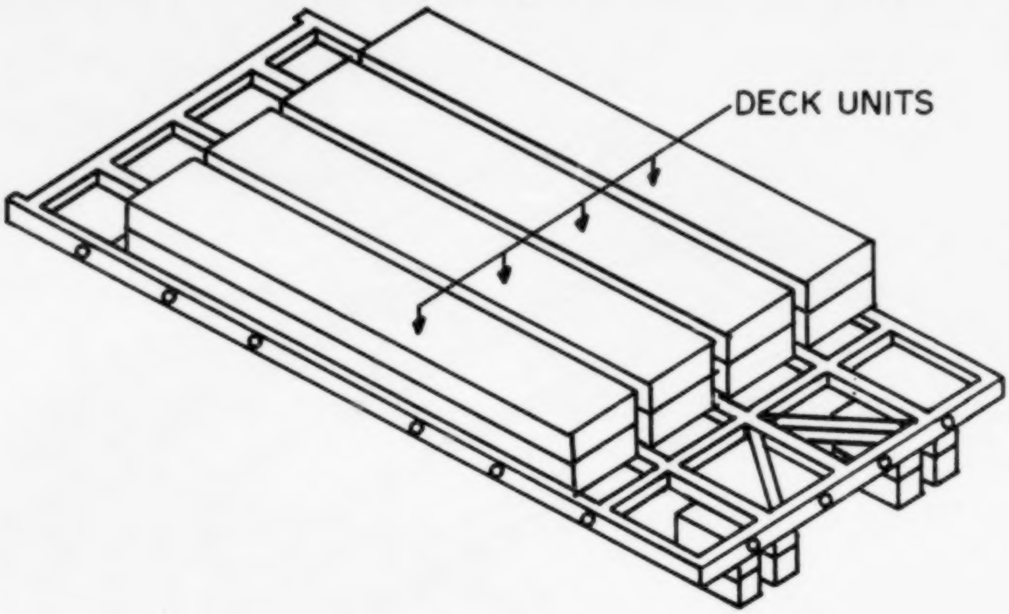
For DSC 1 PROCEED TO STEP 3.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 2. Place 4 deck units on top of the 4 deck units loaded in Step 1. Ensure that stacking lugs and recesses are used for correct alignment.



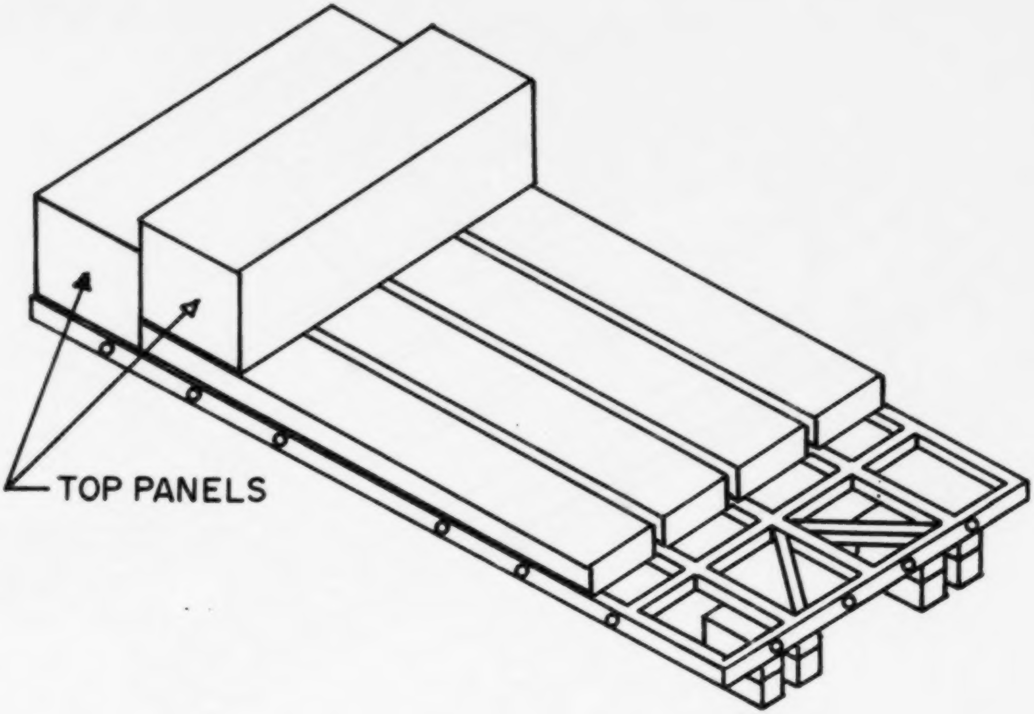
For DSC2 PROCEED TO STEP 4.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 3. Place 2 top panels across the front of the pallet and on top of the deck units.



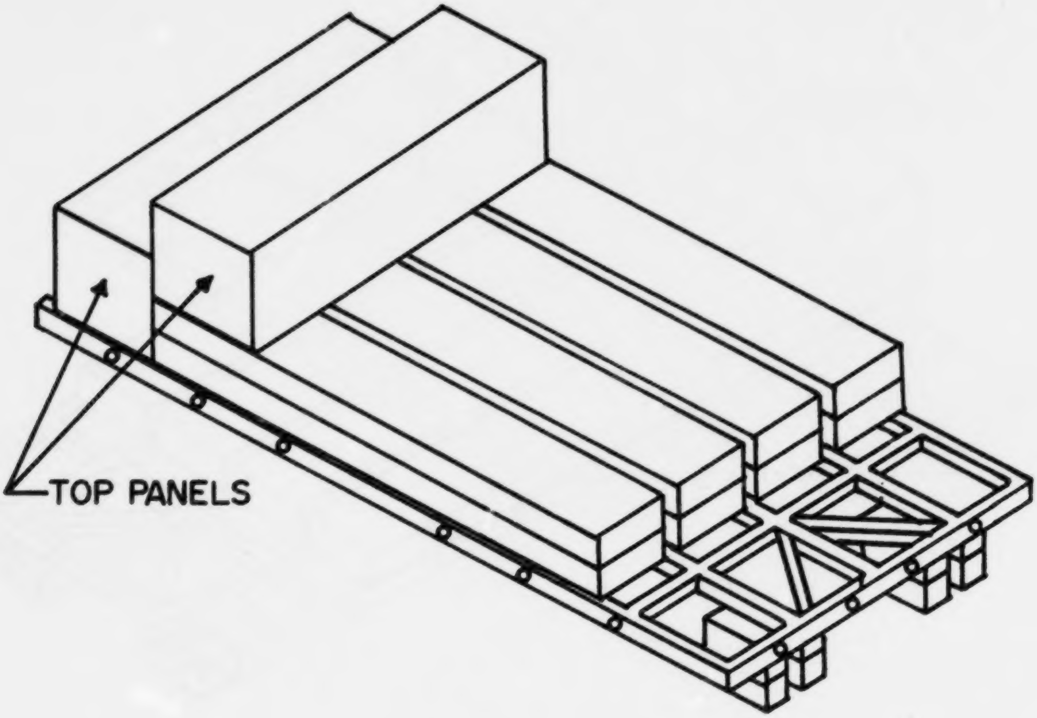
For DSC1, PROCEED TO STEP 5.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 4. Place 2 top panels across the front of the pallet and on top of the deck units.



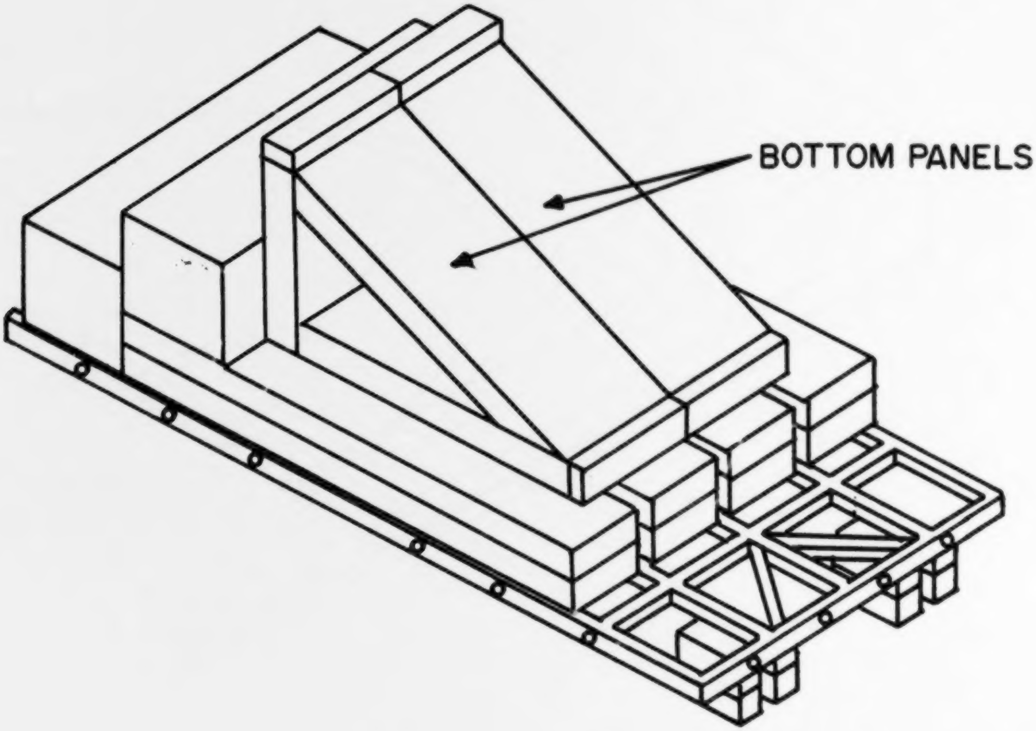
For DSC2, PROCEED TO STEP 6.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 5. Place 2 bottom panels on top of the deck units. Ensure that shoot bolts of bottom panels are in the closed position.



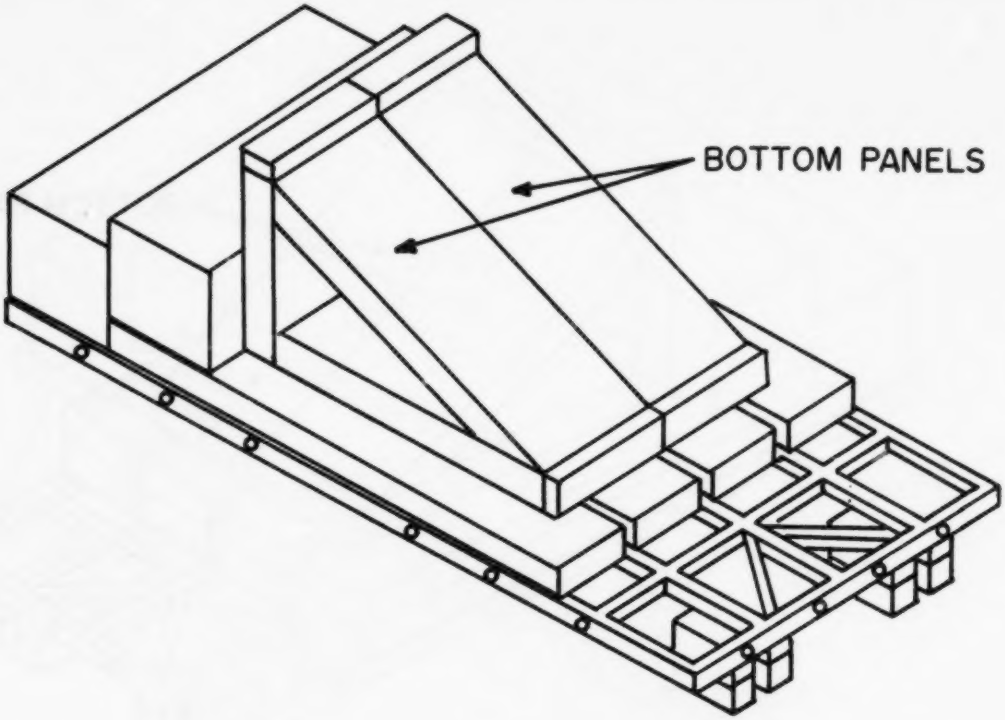
For DSC1, PROCEED TO STEP 7.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 6. Place 2 bottom panels on top of the deck units. Ensure that shoot bolts of bottom panels are in the closed position.



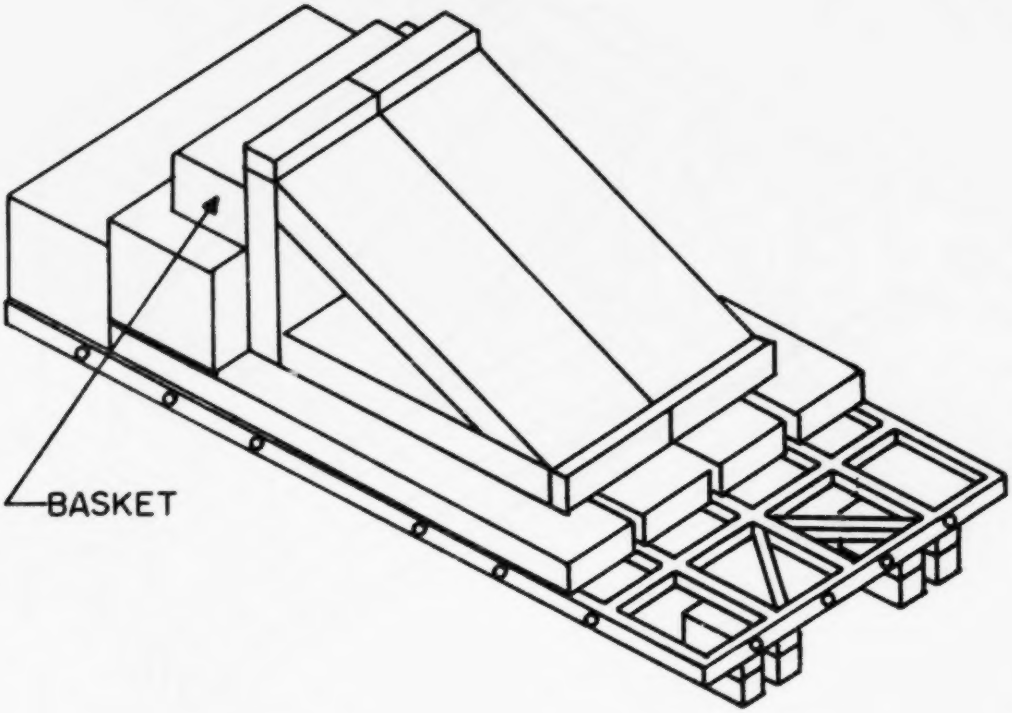
For DSC2, PROCEED TO STEP 8.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 7. Place 1 basket on top of the top panel in front of the bottom panels.



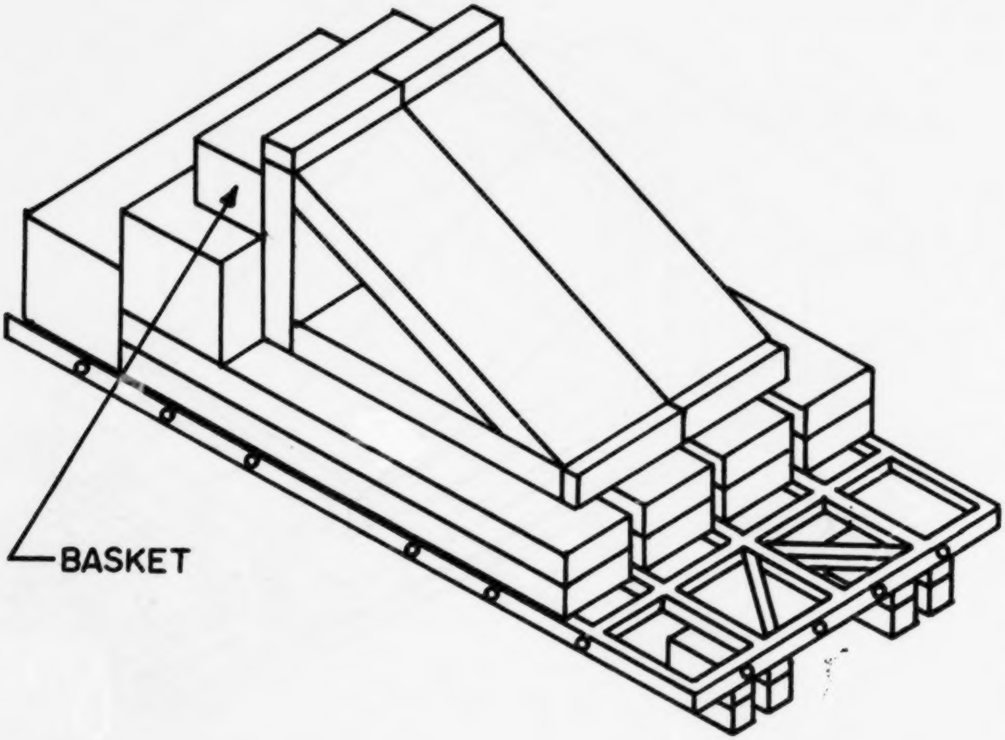
For DSC1, PROCEED TO STEP 9.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 8. Place 1 basket on top of the top panel in front of bottom panels.



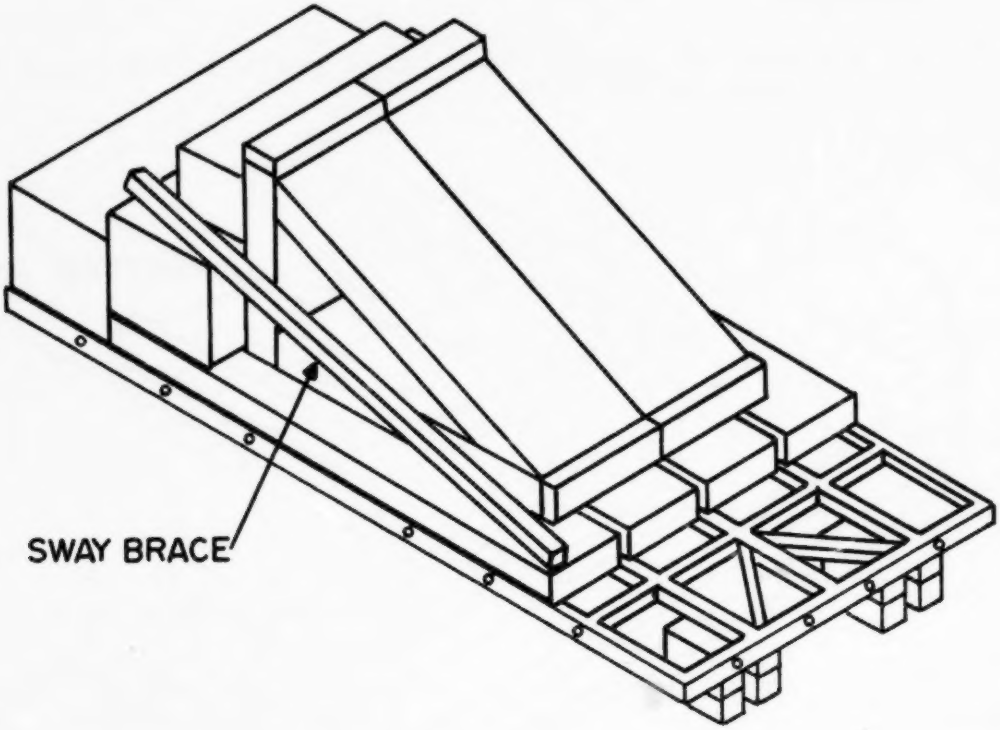
For DSC2, PROCEED TO STEP 10.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 9. Place 1 sway brace along side of bottom panel.



For DSC1, PROCEED TO STEP 13.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

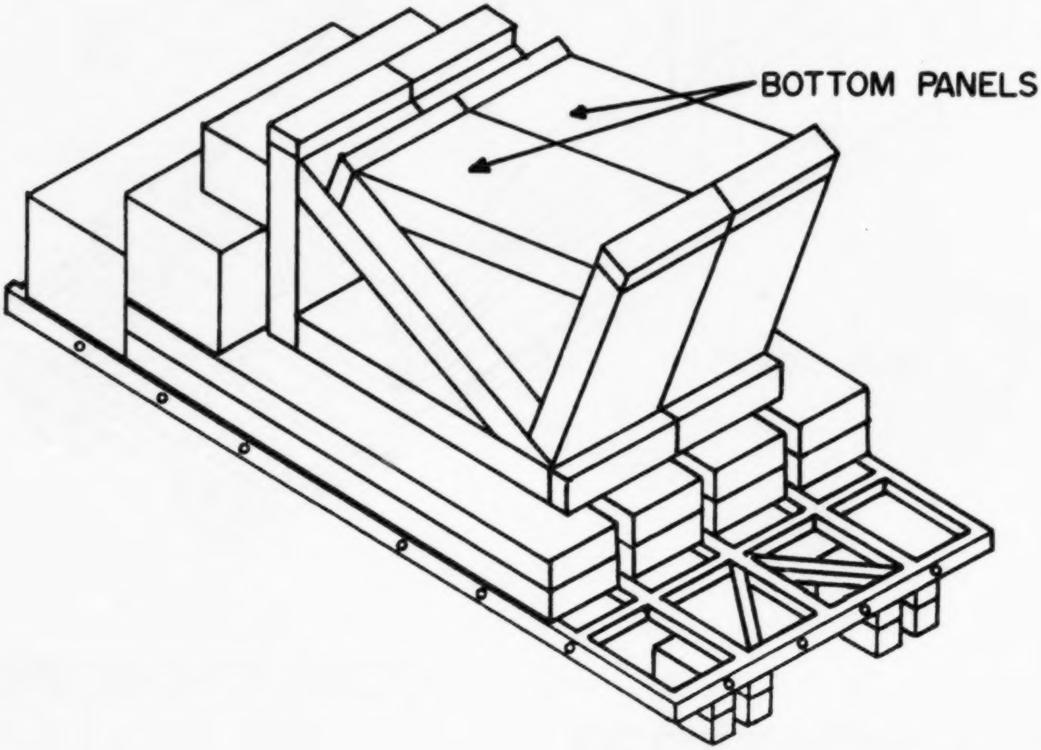
d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 10. Stack 2 bottom panels on top of panels put on in Step 6.

a. Ensure that shoot bolts of the bottom panels are in the closed position.

b. Ensure that the upper bottom panel rests in the stacking lugs of the lower bottom panel.

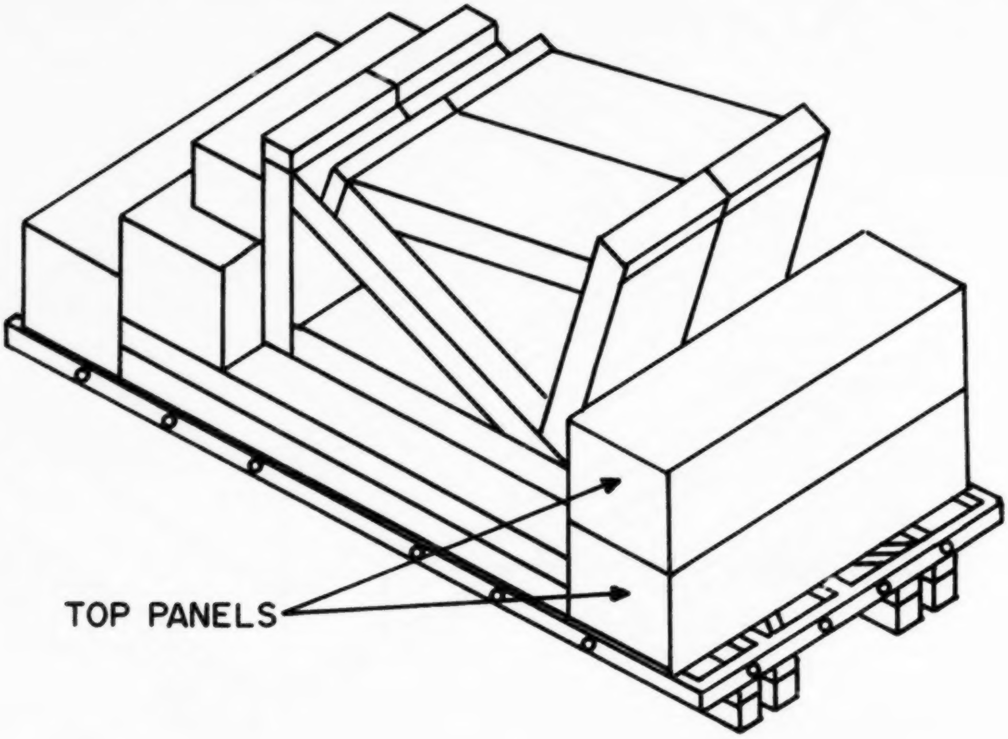


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 11. Stack 2 top panels across the rear of the pallet.

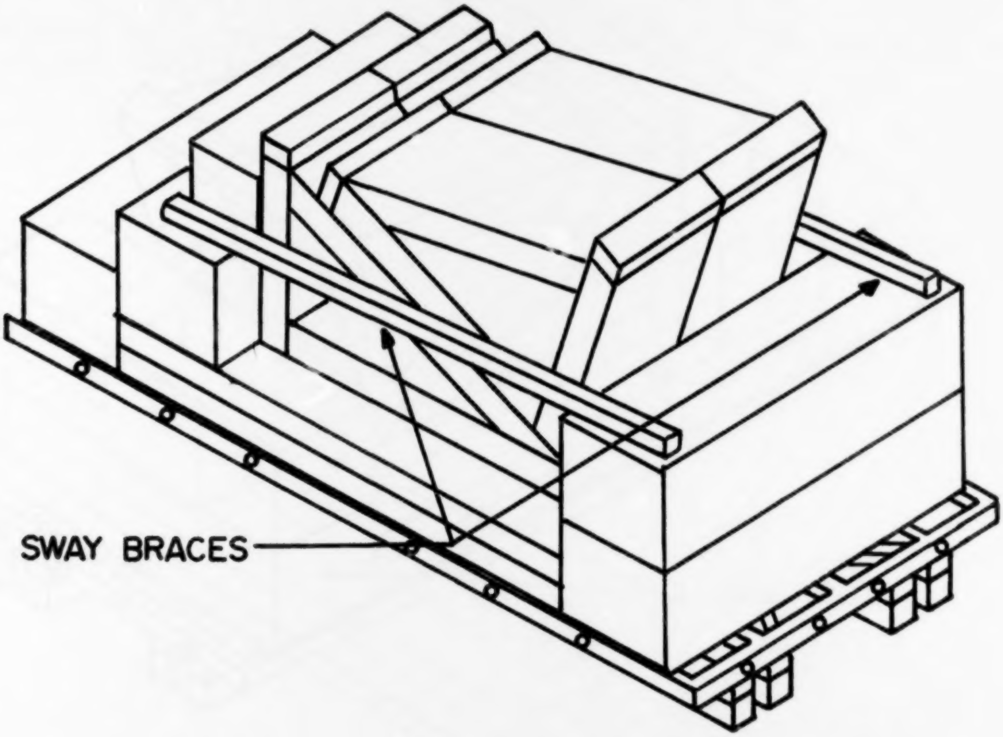


2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 12. Place 2 sway braces on top of top panels and against bottom panels.



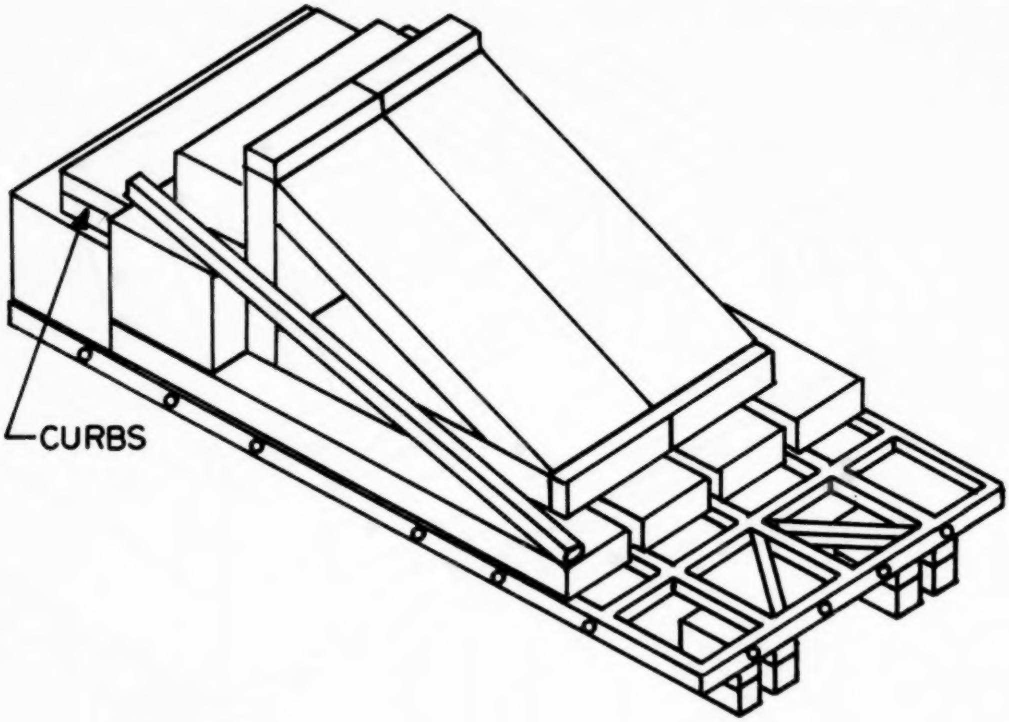
For DSC2, PROCEED TO STEP 14.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 13. Stack 2 curbs on top of the top panel on the front of pallet.



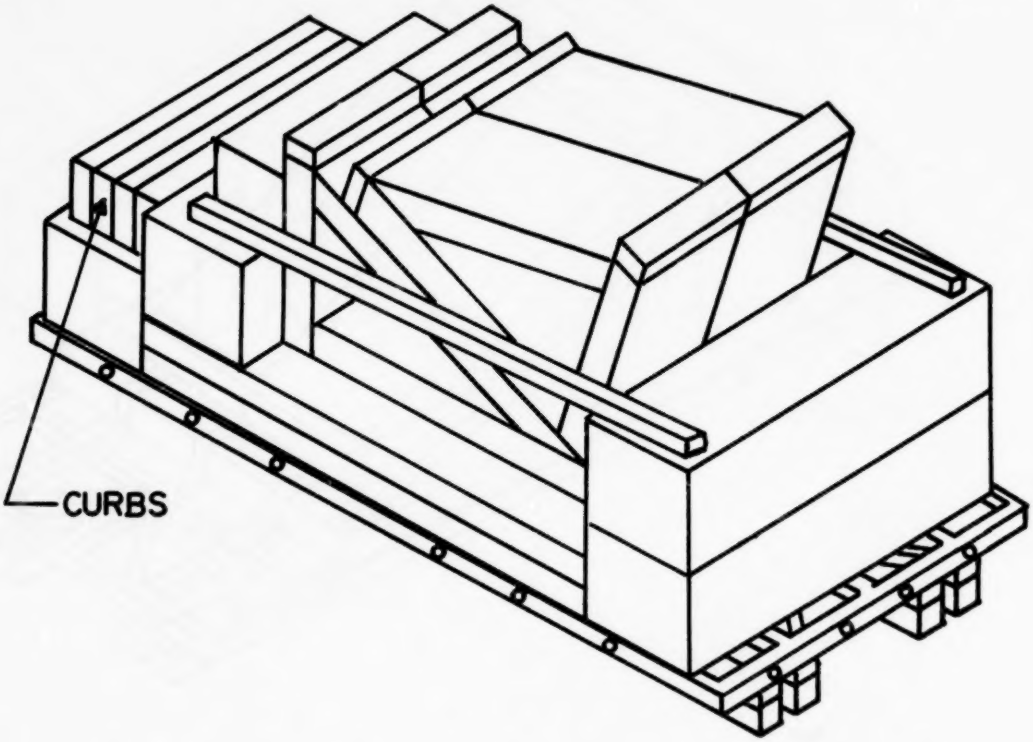
For DSC1, PROCEED TO STEP 15.

2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 14. Stack 4 curbs on top of the top panels on the front of pallet.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

d. Double Story Pallet Loads (Cont).

(6) (d) Pallet Loads DSC1 and DSC2.

Step 15. Secure load with nine 10,000 lb. cargo tie-down straps.

a. Place four straps lengthwise across the pallet load.

b. The strap's ratchet assembly is placed to the rear of the pallet.

c. Hook straps to shackles.

d. Tighten straps.

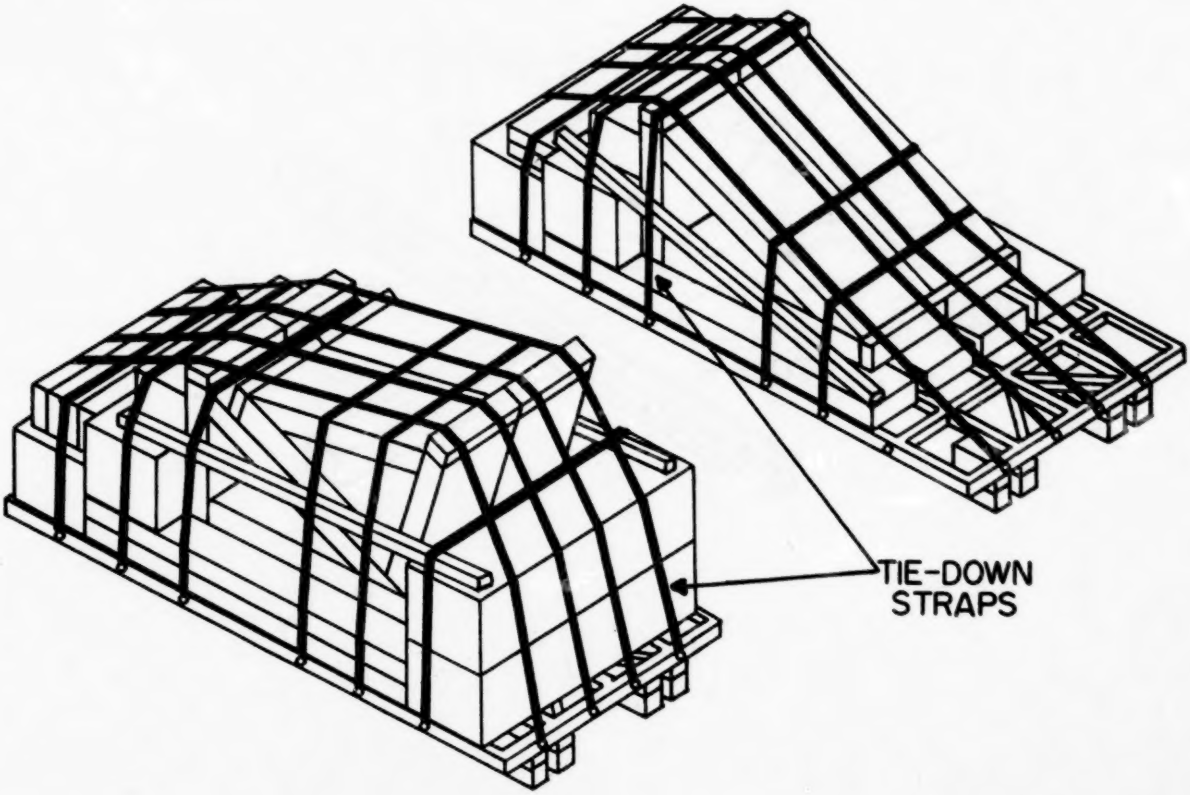
e. Place five straps crosswise across pallet load.

f. The strap's ratchet assembly is placed on right side of pallet.

g. Hook straps to shackles.

h. Tighten straps.

i. Tie the rubber bumper across the pallet load near the rear of the load.



2-12. PALLET LOADS PER BRIDGE/PALLETIZATION (Cont).

e. Spares Pallet Loads

(1) Spares pallet loads contain the components that remain after the pallets required to complete the mission are loaded.

(2) These pallets are loaded as needed to get all the components of the sets onto pallets ready for loading on trucks and trailers.

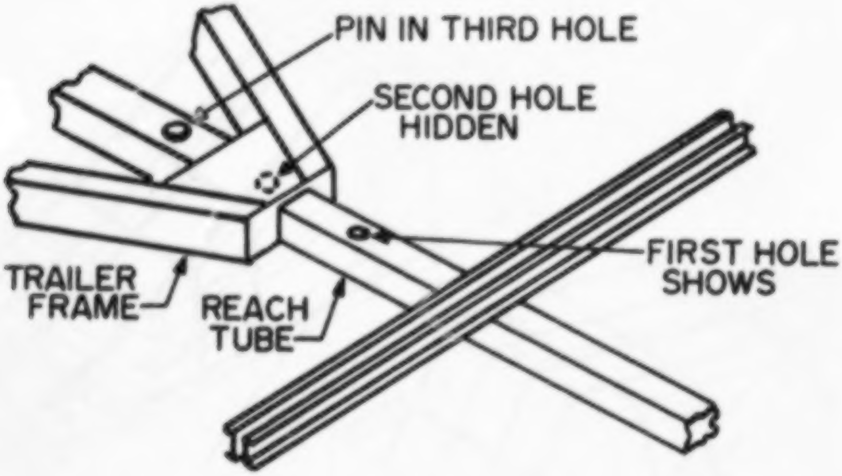
(3) There are no basic spares loads as the variations are many. It is recommended that spares loads be put together in such a way that they can be changed to another type of load with as little change as possible.

2-13. LOADING PALLETS ON TRANSPORT VEHICLES.

a. The procedures for loading pallets on trucks and trailers are the same for all loads.

(1) Loading Pallets on Trailer. To load a pallet on a trailer, perform the following steps.

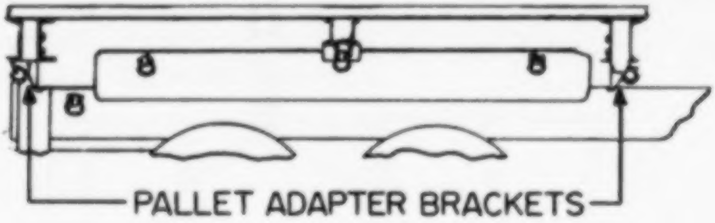
Step 1. Check to see that the reach tube of the trailer has been extended and pinned in the third hole.



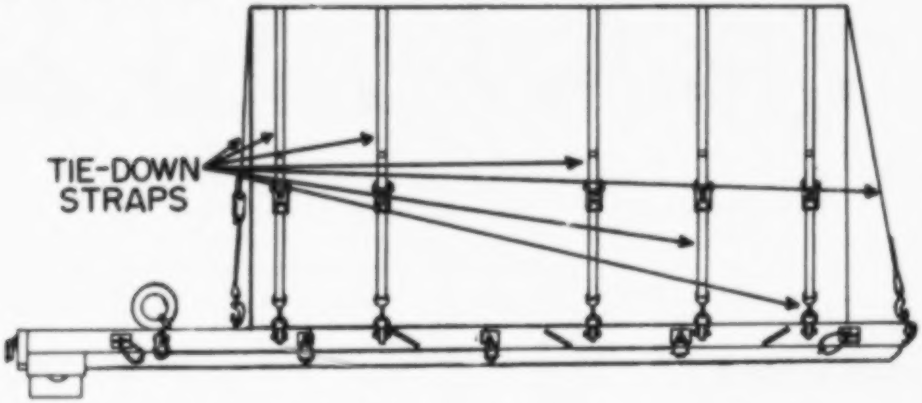
2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (1) (Cont).

Step 2. Check the pallet adapter brackets to see that they are securely bolted to the adapter.



Step 3. Check to see that all load restraining straps are in place and properly tightened.



Step 4. Attach center ring of lifting sling to crane hook.

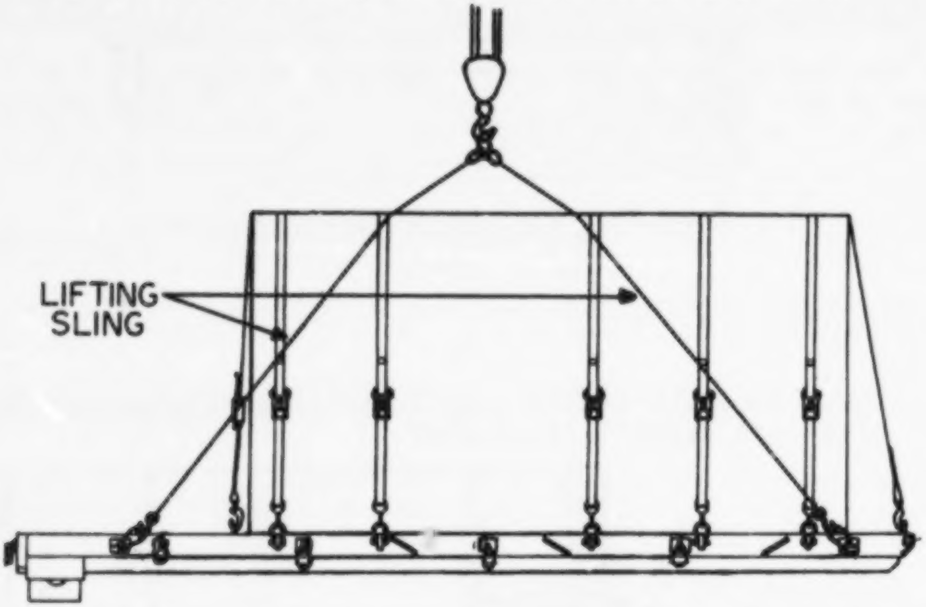
Step 5. Raise sling until four hook ends of sling are a few inches off ground.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

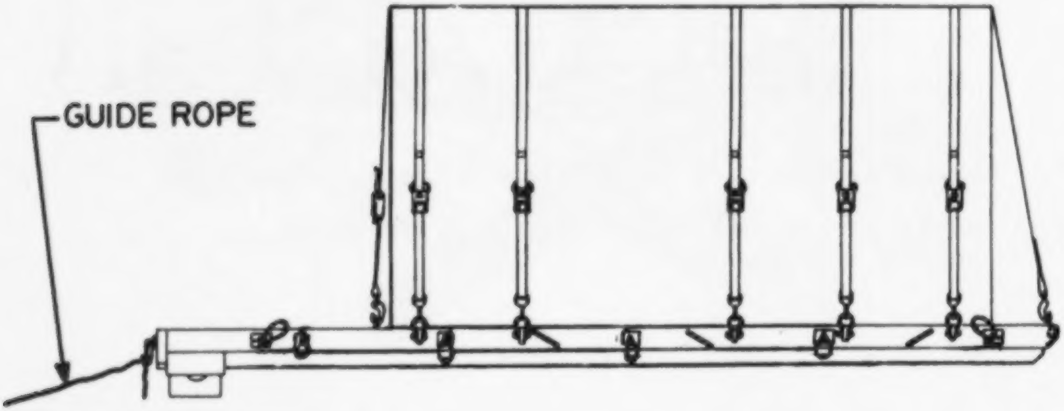
a. (1) (Cont).

Step 6. Attach four hooks of sling to four lifting rings of pallet.

Step 7. Slowly raise lifting sling until lines are taut.



Step 8. Attach one guide rope to each side of pallet at bumper end. One person is to man each of the guide ropes.



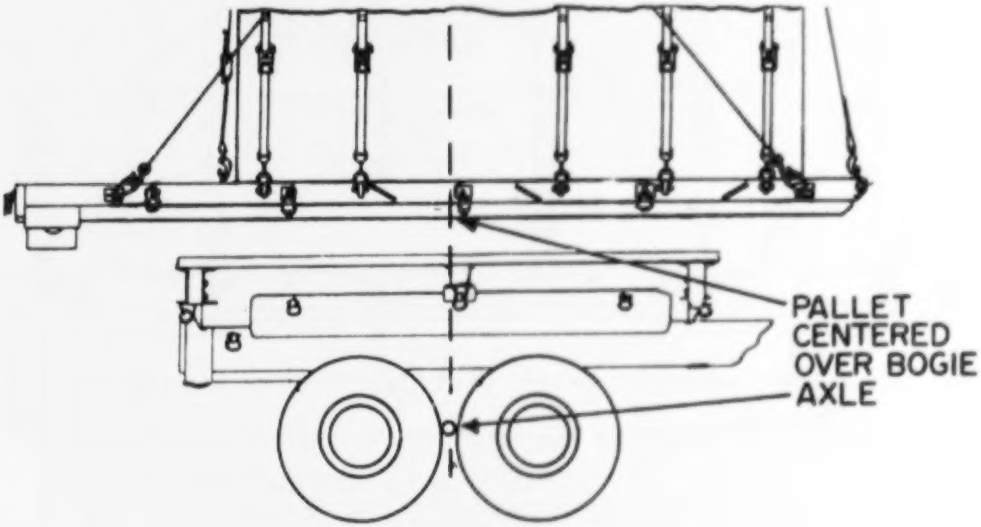
2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (1) (Cont).

Step 9. Raise pallet until it is higher than trailer.

Step 10. Move pallet over trailer bed. Use guide ropes to center pallet over adapter.

Step 11. Move pallet so that pallet center is directly over trailer bogie (center between wheels).



Step 12. Lower pallet slowly onto adapter.

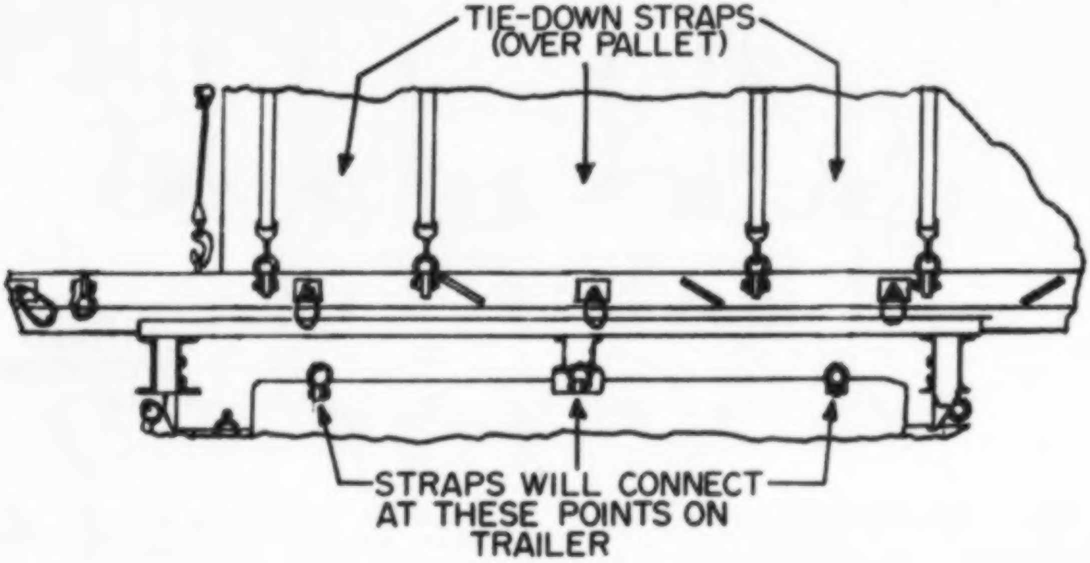
Step 13. Lower lifting sling and disconnect it from pallet.

Step 14. Remove guide ropes from pallet.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

(2) Securing Pallets on Trailer. After the pallet has been placed on the trailer it must be secured for transport. Secure the pallet to the trailer by performing the following steps:

Step 1. Place 3 restraining straps across pallet load at equal spaces. All strap ratchets should be located on the curb side of the trailer.


TIE-DOWN STRAPS (OVER PALLET)
STRAPS WILL CONNECT AT THESE POINTS ON TRAILER

WARNING

Be sure all personnel are clear before throwing straps across load.

CAUTION

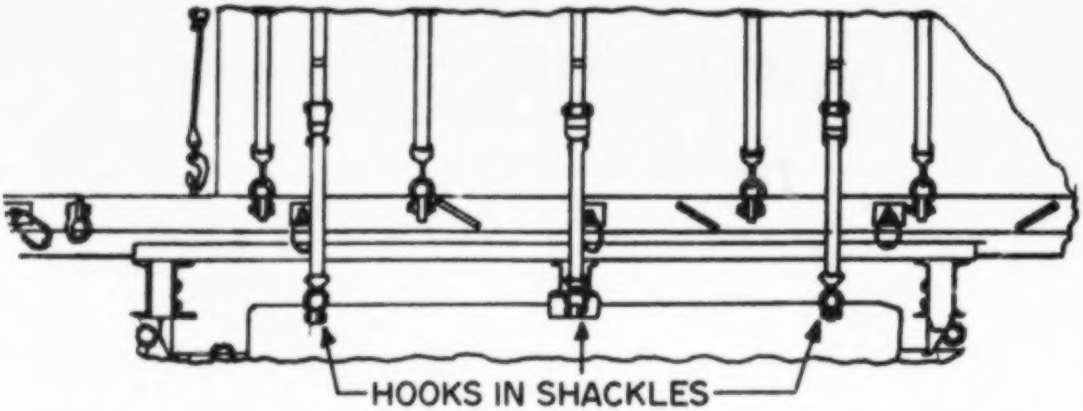
To avoid damage to end of strap with ratchet do not throw it across load.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (2) (Cont).

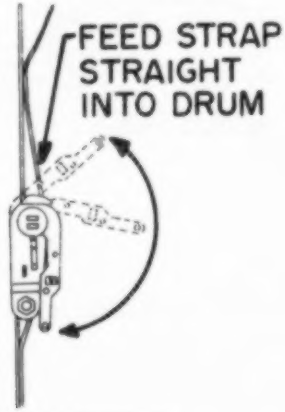
Step 2. Hook straps in shackles on road side of trailer and pull straps from curb side of trailer to tighten.

Step 3. Place hook in shackles on curb side of trailer.



Step 4. Pull free end of strap at ratchet to take up slack.

Step 5. Tighten strap by operating ratchet handle. Tighten straps as tight as possible.



NOTE

Ensure that strap is fed straight into drum when tightening.

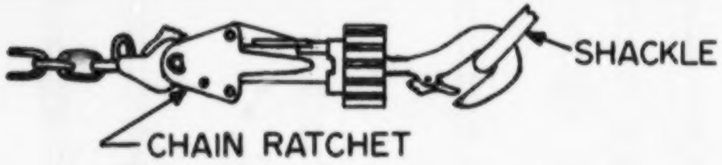
CAUTION

Hand tighten only. Ratchet may be damaged if mechanical means are used to operate ratchet handle.

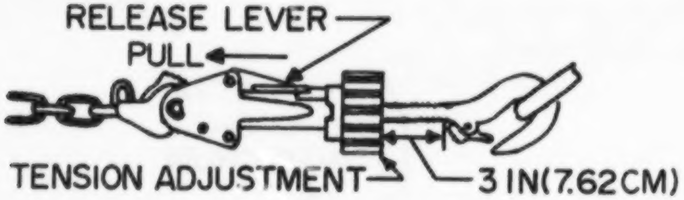
2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (2) (Cont).

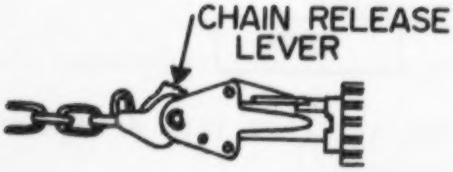
Step 6. Hook an anchor chain ratchet to large shackle on each side of trailer at rear. Open part of hook is down.



Step 7. Pull release lever on ratchet assembly and turn tension adjustment until hook is extended about 3 in (7.62 cm).



Step 8. Release chain from ratchet by pressing chain release lever down.

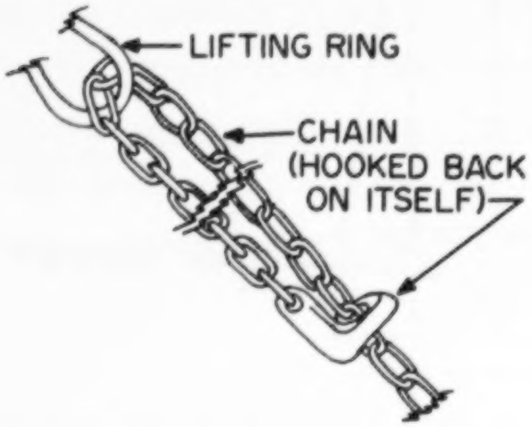


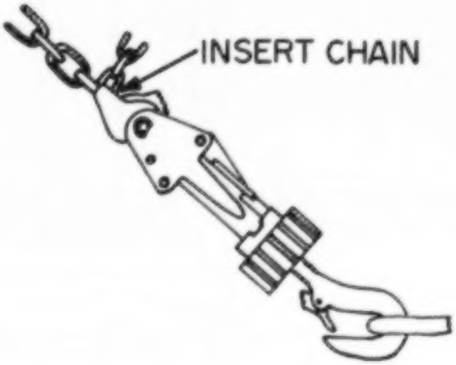
2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (2) (Cont).

Step 9. Put hook end of chain through pear shaped lifting ring at rear of pallet. (The extractor end of the pallet is considered the rear)

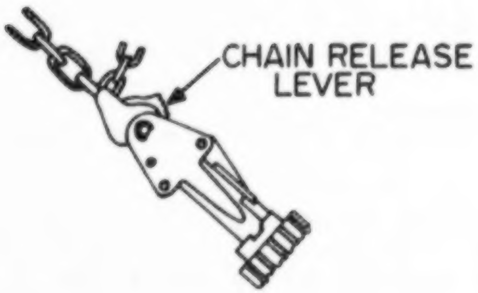
Step 10. Hook chain back on itself.

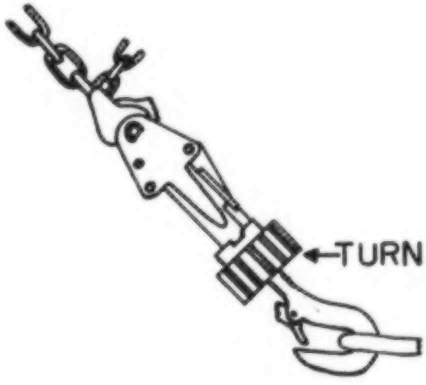




Step 11. Pull chain tight and attach it to chain ratchet assembly.

Step 12. Lock lever which was unlocked in Step 8.





Step 13. Turn tension grip adjustment until chain is tight. Hand tighten only.

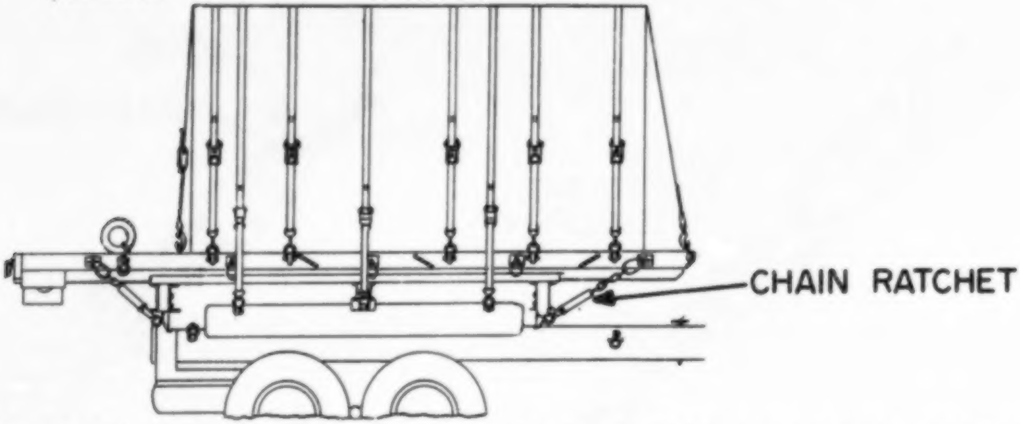
NOTE

The hook on the ratchet assembly can be tightened without pushing the release lever as required in step 7.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (2) (Cont).

Step 14. Attach anchor chain ratchet to front of pallet. Use procedures outlined in steps 6 thru 13, except that in step 6 the chains are run under the pallet and attached to the 10,000 lb (4540 kg) tie-down eyes at the front of the pallet.



(3) Loading Pallet on Trucks. To load pallet on truck perform the following steps in a similar manner as they were performed to load the trailer.

NOTE

The tailgate of the truck does not have to be, but can be removed and stored before loading pallets on the truck. One method of keeping the tailgate with the truck is to bolt it to the head board of the truck.

Step 1. Check to see that all load restraining straps are in place and properly tightened.

Step 2. Attach center ring of lifting sling to crane.

Step 3. Raise sling until the four hook ends of sling are a few inches off of ground.

Step 4. Attach four hooks of sling to four lifting rings of pallet.

Step 5. Slowly raise lifting sling until lines are taut.

Step 6. Attach one guide rope to each side of pallet at bumper end. One person is to man each of the guide ropes.

Step 7. Raise pallet until it is higher than sides of truck body.

Step 8. Move pallet over truck body.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (3) (Cont).

Step 9. Use guide ropes to center pallet over truck body.

Step 10. Move pallet to front of truck body.

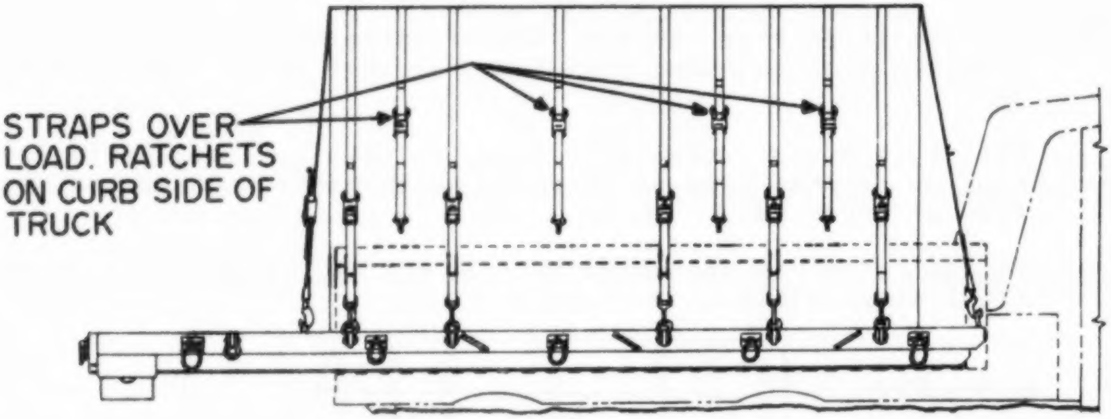
Step 11. Slowly lower pallet onto truck bed.

Step 12. Lower lifting sling and disconnect it from pallet.

Step 13. Remove guide ropes from pallet.

(4) Securing Pallet on Truck. After the pallet has been placed on the truck, it must be secured for transport. To secure the pallet to the truck perform the steps in this paragraph.

Step 1. Place 4 straps (5,000 lb) across pallet load at equal spaces. All straps' ratchets should be located on curb side of truck.



NOTE

Be sure that all personnel are clear before throwing straps across the load.

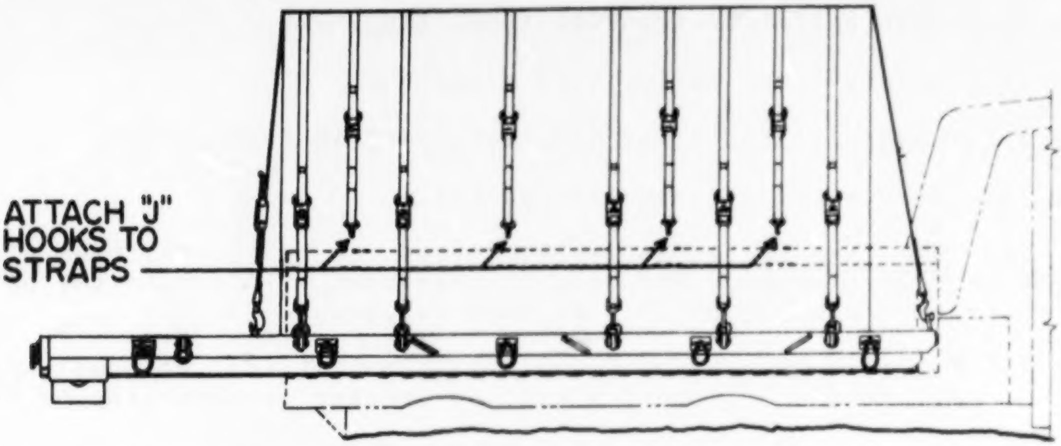
CAUTION

If the straps are thrown cross the load the end of the strap with the ratchet should not be thrown since it may be damaged.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (4) (Cont).

Step 2. Attach "J" hooks to each end of the straps.

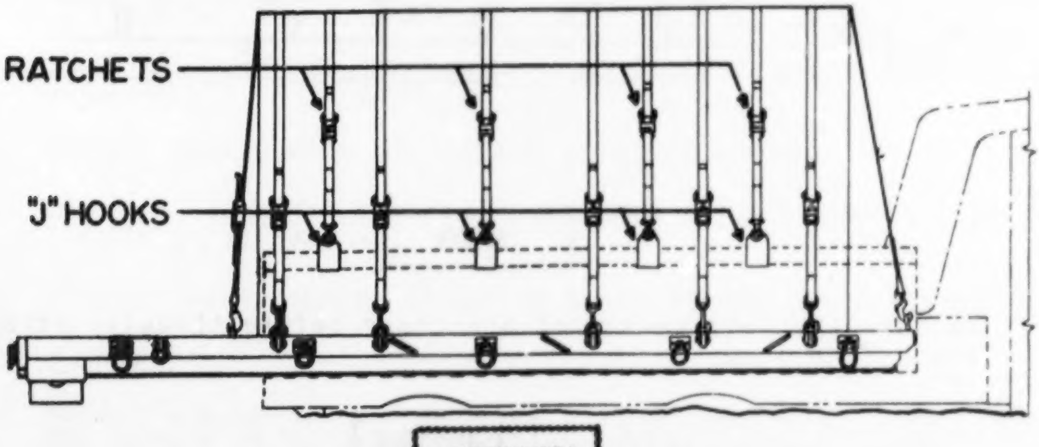


Step 3. Tighten one strap at a time as follows:

a. Pull on strap from ratchet side of strap while "J" hook on the opposite side is being positioned so that it will hook on truck bed.

b. Pull free end of strap at ratchet to take up slack while "J" hook on ratchet side of strap is being positioned to hook on side of truck bed.

c. Tighten strap by operating ratchet handle. Tighten strap as tight as possible.



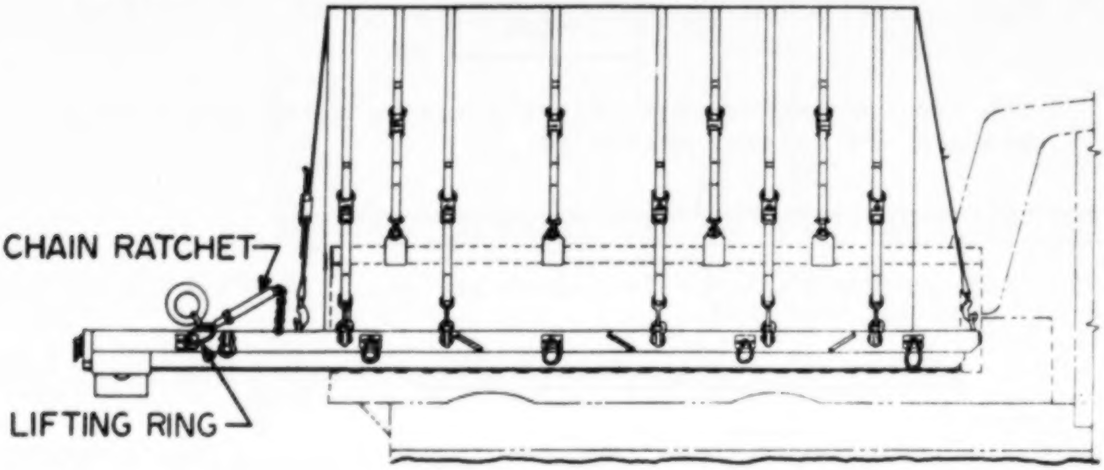
CAUTION

Hand tighten only. The ratchet may be damaged if mechanical means are used to operate the ratchet handle.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (4) (Cont).

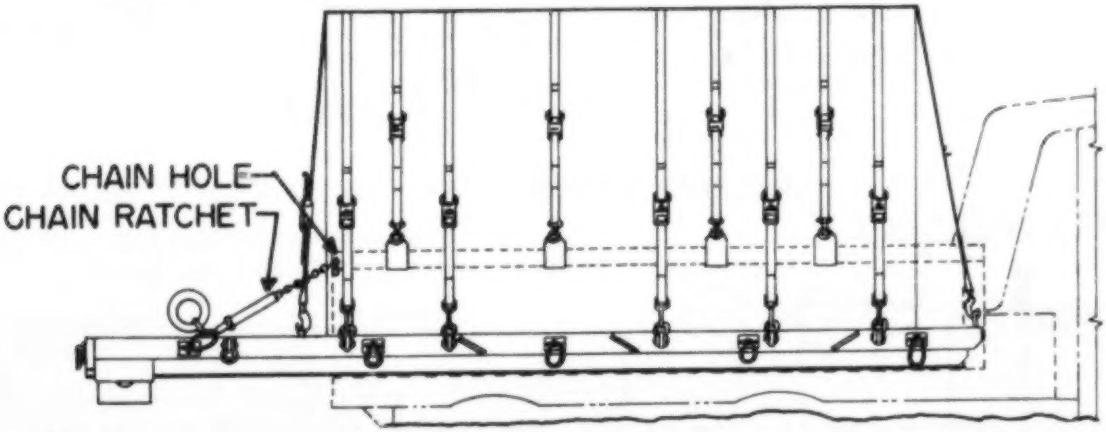
Step 4. Hook an anchor chain ratchet assembly to each pear link lifting ring at rear of pallet. The extractor end of the pallet is considered the rear.



Step 5. Press tension release lever on underside of ratchet assembly and turn tension adjustment until hook is extended about 3 inches (7.62 cm).

Step 6. Release chain from ratchet assembly by pulling chain release lever down and away from ratchet.

Step 7. Hook one end of chain in tailgate chain hole in dump truck body.



Step 8. Pull chain tight and attach it to chain ratchet assembly.

Step 9. Relock chain release lever that was released in Step 6.

2-13. LOADING PALLET ON TRANSPORT VEHICLES (Cont).

a. (4) (Cont).

Step 10. Turn tension grip adjustment until chain is tight. Hand tighten only.

NOTE

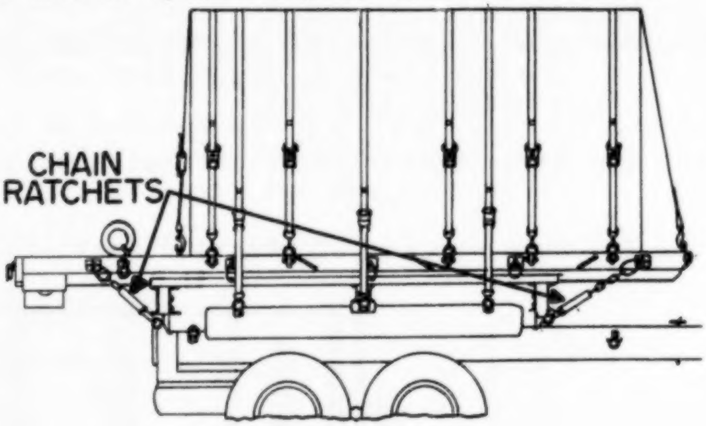
The hook on the ratchet assembly can be retracted without pushing the release mechanism.

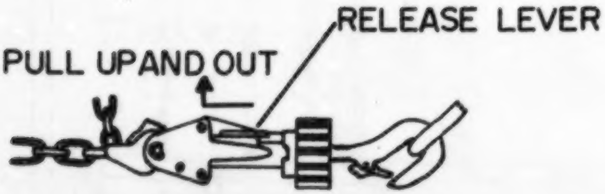
2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES

a. The procedures for off-loading pallets from trucks and trailers are the same for all loads.

(1) Off-Loading Pallets from Trailer. Perform the steps in this paragraph to remove the loaded pallet from a trailer.

Step 1. Release four anchor chains by pulling up and out on chain release levers.





Step 2. Remove chains from pallet and remove chain ratchet assemblies from trailer. Store them in a safe place to prevent damage or loss.

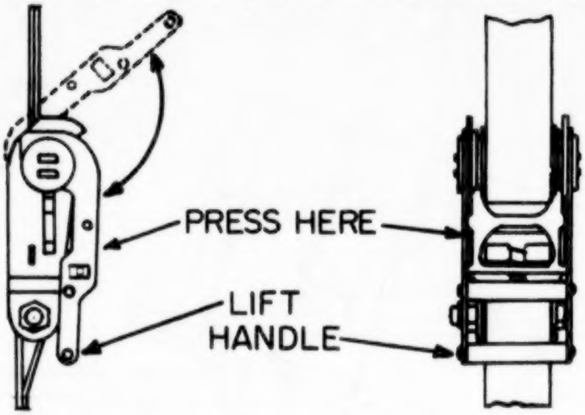
Step 3. Remove rubber bumper from pallet.

2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

a. (1) (Cont).

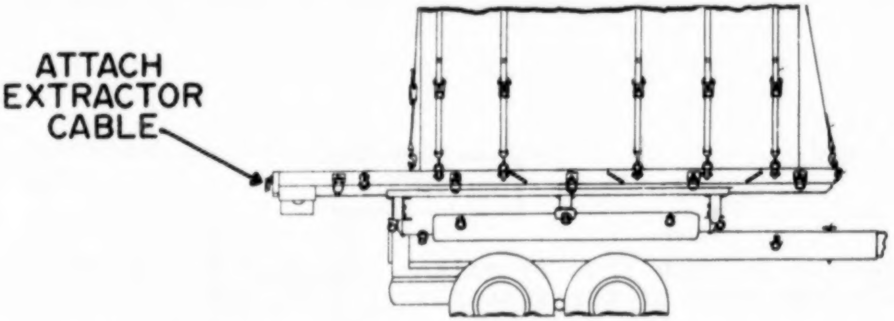
Step 4. Release the straps which secure pallet to the trailer as follows:

a. Hold ratchet handle and press down on handle center lever with thumb.



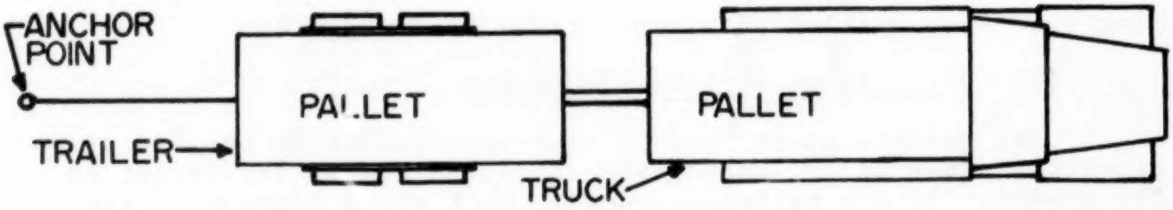
b. Lift up handle until ratchet releases tension on straps.

c. Remove straps from pallet. Store the straps in a safe place to prevent damage or loss.



Step 5. Attach extractor cable to pallet extractor bracket.

Step 6. Attach other end of extractor cable to an anchor point behind and in line with truck/trailer combination.

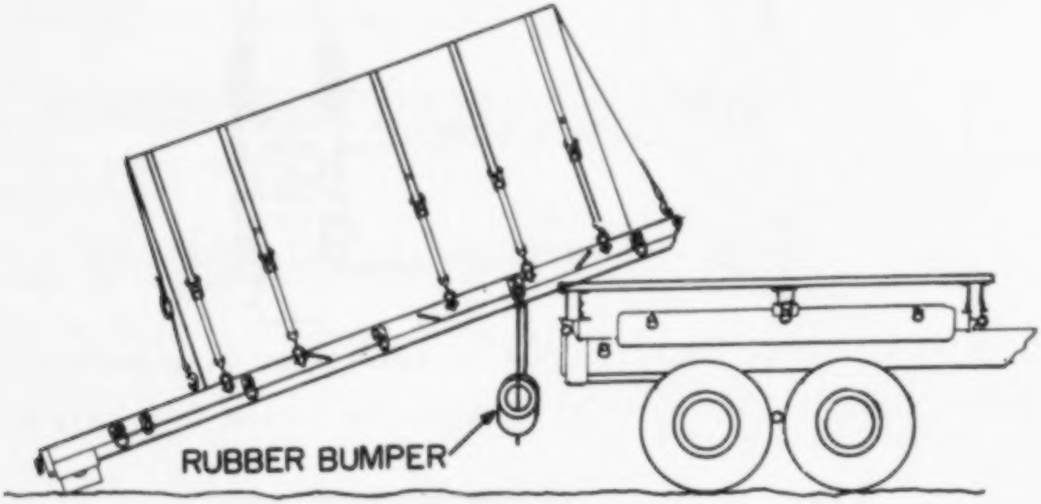


2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

a. (1) (Cont).

Step 7. Move trailer forward until extractor end of pallet hits ground.

Step 8. Connect rubber bumper under high end of pallet as close to trailer as possible.



NOTE

One person on each side of pallet should pull toward the trailer on the free ends of the bumper assembly rope.

Step 9. Move trailer forward letting pallet fall to ground.

Step 10. Disconnect extractor cable. Store cable to prevent loss or damage.

Step 11. Move trailer away from bridge building area.

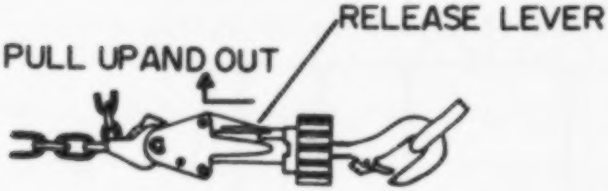
(2) Off-Loading Pallets from Truck.

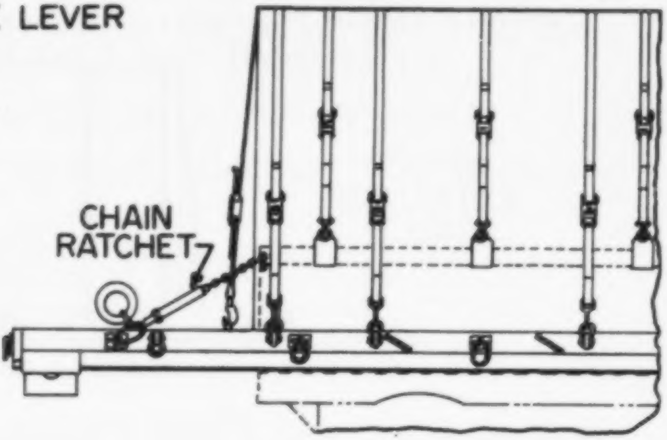
The pallet can be removed from the truck with the aid of an extractor cable or by dumping the extractor end of the pallet on the ground. If the pallet is dumped, omit steps 5 and 6 of the following procedures. If an extractor cable is used, perform all steps of the procedure.

2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

a. (2) (Cont).

Step 1. Release 2 anchor chains by pulling down and out on chain release levers.



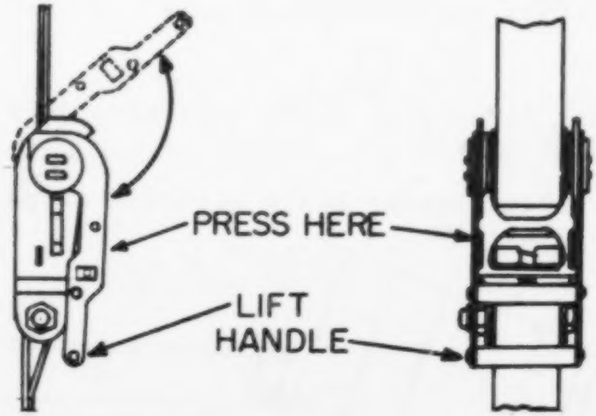


Step 2. Remove chains from truck. Store chains in a safe place to prevent damage or loss.

Step 3. Remove rubber bumper from pallet.

Step 4. Release the straps which secure pallet to the truck as follows:

a. Hold ratchet handle and press down on handle center lever with thumb.

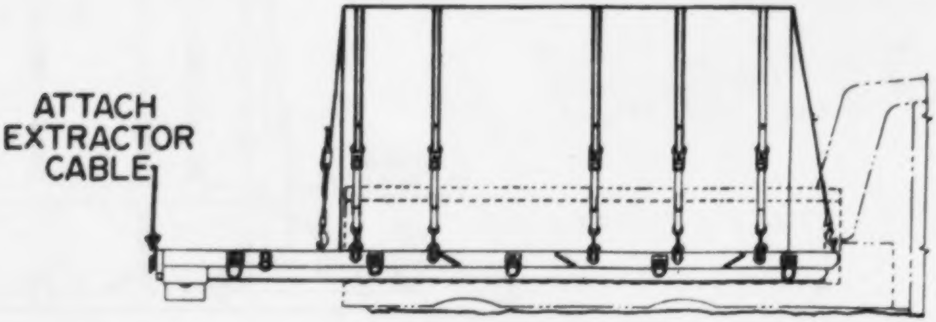


2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

a. (2) (Cont).

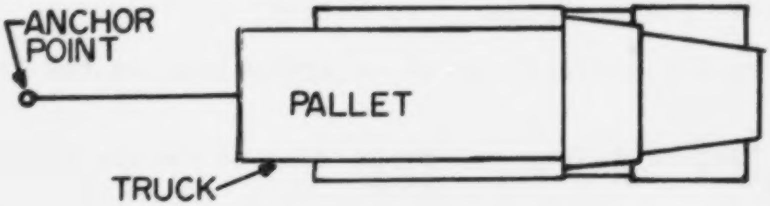
b. Lift up handle until ratchet releases tension on straps.

c. Remove straps from pallet. Store the straps in a safe place to prevent damage or loss.



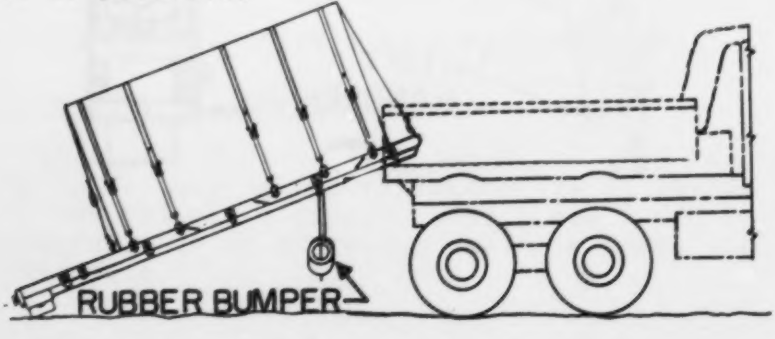
Step 5. Attach extractor cable to pallet extractor bracket.

Step 6. Attach other end of extractor cable to an anchor point behind and in line with truck.



Step 7. Move truck forward or raise dump body until extractor end of pallet hits ground.

Step 8. Connect rubber bumper under high end of pallet as close to truck as possible.



2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

a. (2) (Cont).

NOTE

One person on each side of the pallet should pull toward the truck on the free ends of the bumper assembly rope.

Step 9. Drive truck forward letting pallet fall to ground.

Step 10. Disconnect extractor cable (if used) and drive truck away from building area.

b. Off-Loading on Normal Sites. The procedures below should always be followed when off-loading on normal sites.

(1) Ensure that the pallets are dropped so that they are never closer than 22 ft (6.7 m) to the center line.

(2) Pallets should be off-loaded in the order in which they are needed for construction. For example, the pallet containing the erection and launch components is always off-loaded first, to one side of center line, near the edge of the gap.

(3) Use the dump trucks, or other unit vehicles as anchorages for off-loading trailers.

(4) Drive trucks and trailers straight on and off site. Avoid backing them.

(5) Disconnect trailers in an area clear of the site, and have trucks return for off-loading.

(6) Always unload all erection/launch and bay loads before starting construction.

2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

b. Off-Loading on Normal Sites (Cont).

CAUTION

DO NOT USE the bridge as an anchorage to off-load ramp and deck loads.

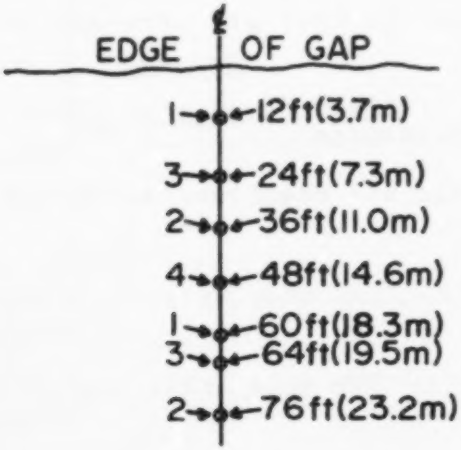
(7) The following is an example of off-loading a 2E + 12 bay on a normal site.

The truck and trailer loading in this example is as follows:

Truck #	Load	Trailer #	Load
1	DSC	1	ED
2	EOB2	2	DSC
3	DSC	3	EOB1
4	LR/D	4	DSC

(a) Place small markers on the bridge centerline as shown.

1) Drive trucks with trailers toward and over markers (center of truck over marker). Stop truck when front wheels have passed over centerline.

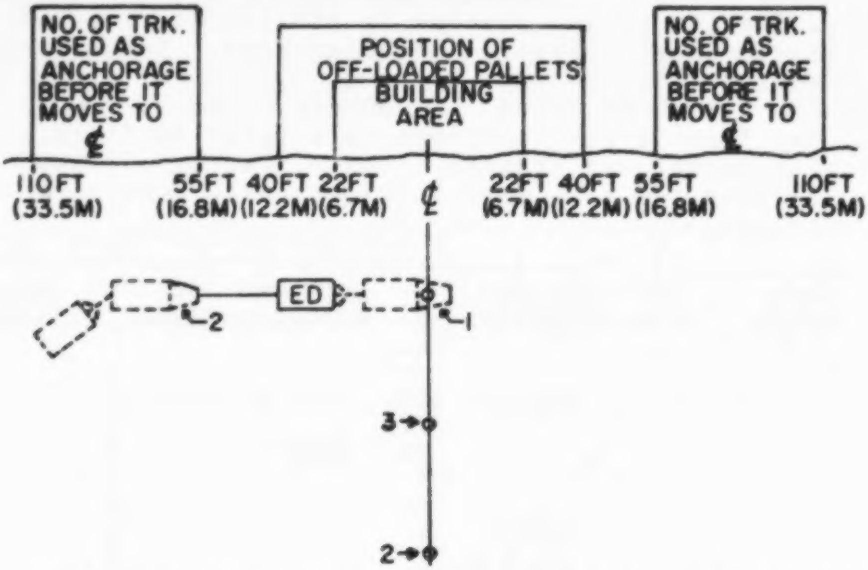


2) Trucks with trailers will be driven towards the markers and stopped about 20 ft. (6.1 m) from the marker.

(b) For trucks with trailers, a second truck is driven in behind the first. This truck is used as an anchorage for off loading the first trailer.

2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

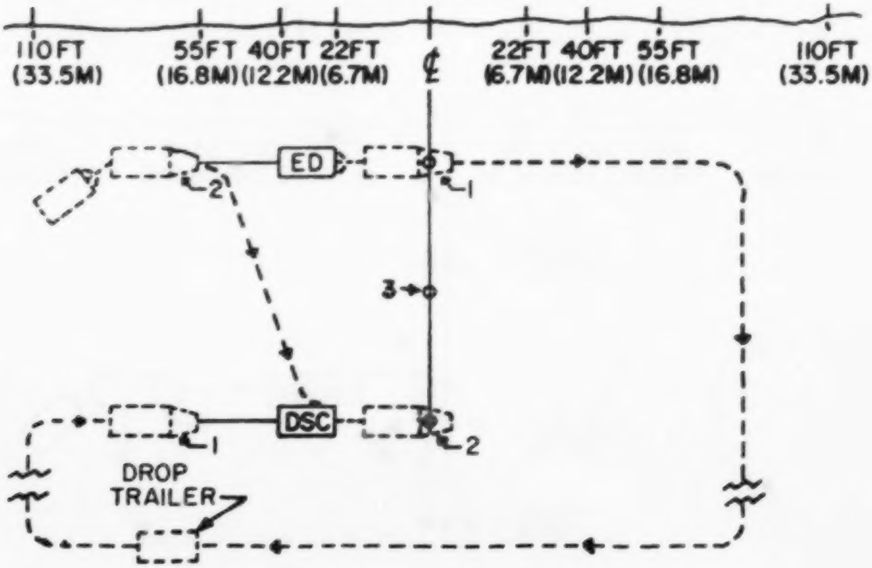
b. Off-Loading on Normal Sites (Cont).


NO. OF TRK. USED AS ANCHORAGE BEFORE IT MOVES TO ℄
POSITION OF OFF-LOADED PALLETS
BUILDING AREA
NO. OF TRK. USED AS ANCHORAGE BEFORE IT MOVES TO ℄
110FT (33.5M)
55FT (16.8M)
40FT (12.2M)
22FT (6.7M)
℄
22FT (6.7M)
40FT (12.2M)
55FT (16.8M)
110FT (33.5M)
ED
2
1
3
2

(c) After the first trailer is off-loaded, truck and trailer are driven to trailer dropping area. First truck returns to site.

(d) The second truck is driven toward and over mark and stopped.

(e) The first truck is driven in behind the second and used as an anchorage for off-loading the trailer.

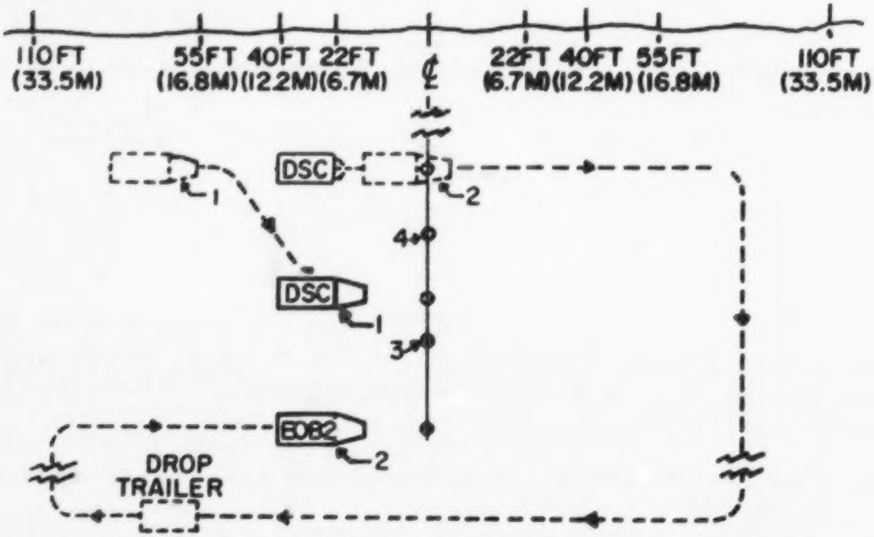


2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

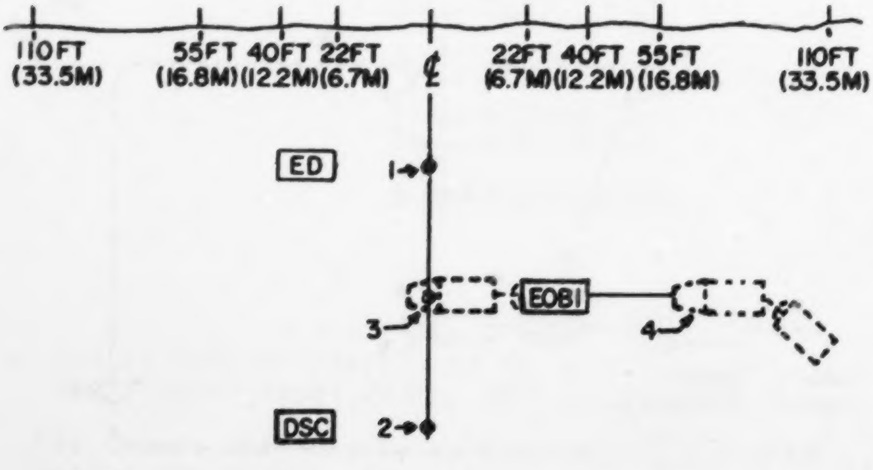
b. Off-Loading on Normal Sites (Cont).

(f) After the second trailer is off-loaded, truck and trailer are driven to trailer dropping area. Second truck returns to site.

(g) The first truck is driven to a point 20 ft (6.1 m) from its marker and stopped. Its pallet is off-loaded by raising the dump body. This is also done with the second truck.

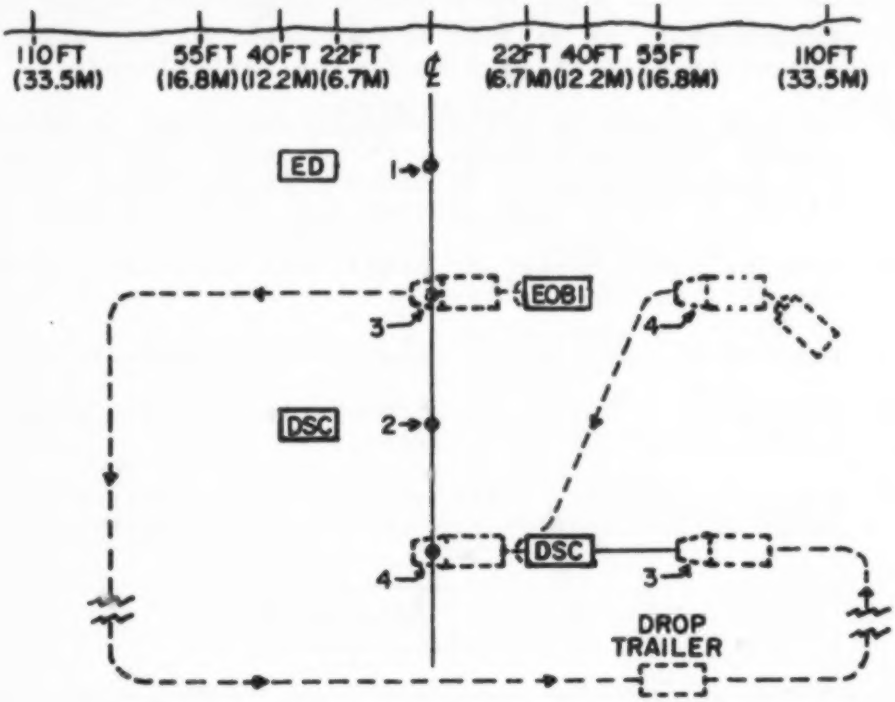


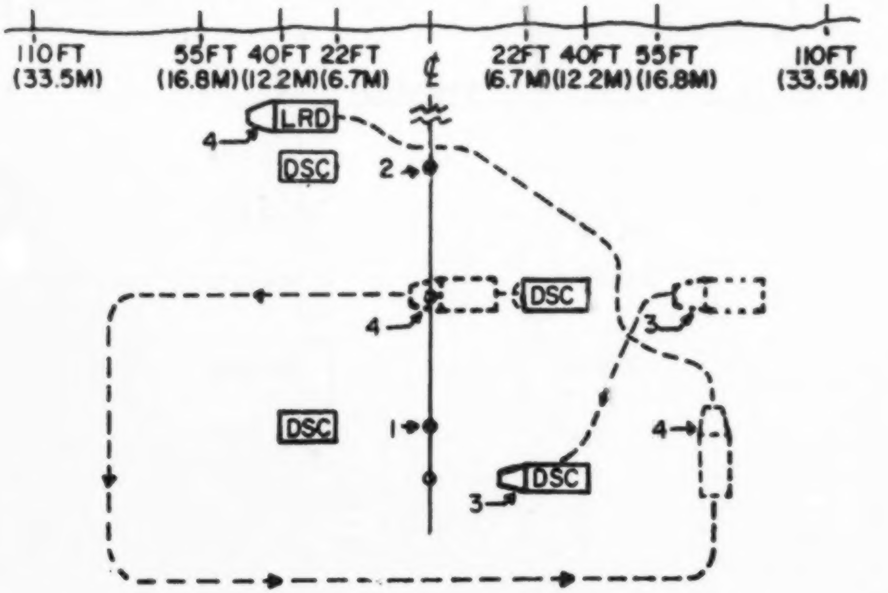
(h) The same procedures are performed with the third and fourth trucks and trailers on the other side of the site except the fourth truck is not off-loaded. Once the bridge has been launched and jacked down, the fourth truck is driven onto the site and off-loaded.



2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

b. Off-loading on Normal Sites (Cont).





2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

c. Off-loading on Restricted Sites. The procedures below should always be followed when off-loading on restricted sites.

(1) Ensure that the pallets are dropped so that they are never closer than 10 ft (3.0 m) to the centerline.

(2) Pallets should be off-loaded in the order in which they are needed for construction. For example, the pallet containing the erection and launch components is always off-loaded first, to one side of centerline, near the edge of the gap.

(3) Use the dump trucks, or other unit vehicles, as anchorages for off-loading trailers.

(4) Backing of vehicles is required, use caution.

(5) Disconnect trailers in an area clear of the site and have trucks return for off-loading.

(6) Always unload all erection and launch components and at least 2 bay loads before starting construction.

CAUTION

DO NOT USE the bridge as an anchorage to off-load ramp and deck loads.

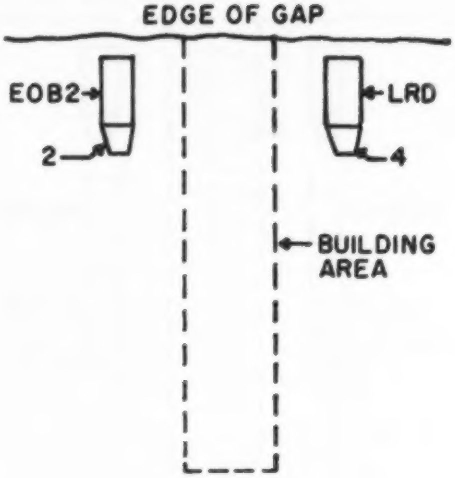
(7) The following gives an example of off-loading a 2E + 12 bay on a restricted site.

Truck #	Load	Trailer #	Load
1	DSC	1	ED
2	EOB2	2	DSC
3	DSC	3	EOB1
4	LR/D	4	DSC

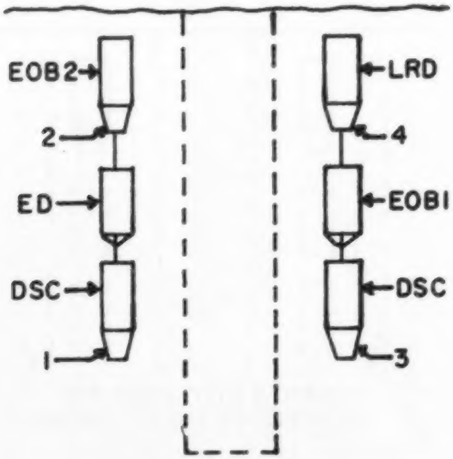
2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

c. Off-loading on Restricted Sites (Cont).

(a) Trucks 2 and 4 back onto site (trailers have been parked in a rear area).



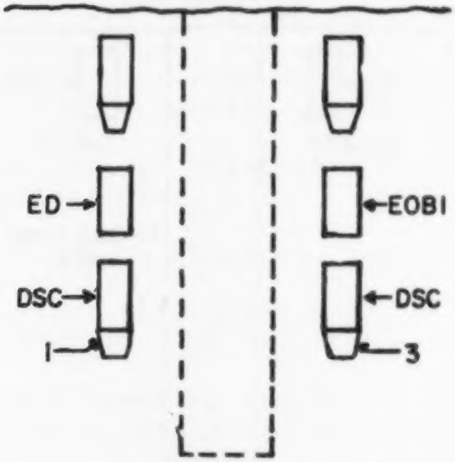
(b) Trucks 1 and 3 (w/trlrs) back onto site. Trucks 2 and 4 will be used as anchorage for off-loading pallets from trailers 1 and 3. Trucks 1 and 3 move off of site. Park trailers.



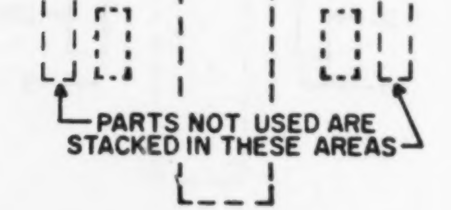
2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

c. Off-Loading on Restricted Sites (Cont).

(c) Trucks 1 and 3 return to site and off-load pallets, move to rear area, pick-up trailers 2 and 4, and return to site.



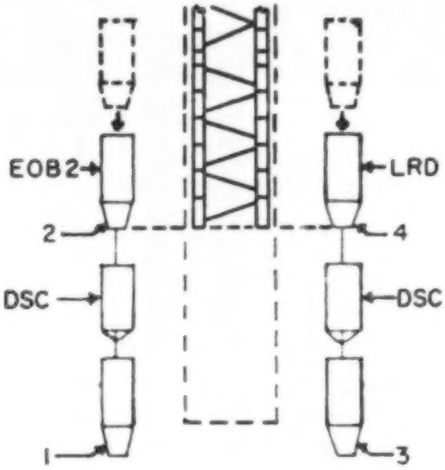
(d) Pallets on ground are off-loaded and components are used to construct 6 bays of bridge. All components not required at this time are placed to sides of site. Empty pallets are carried off of site.



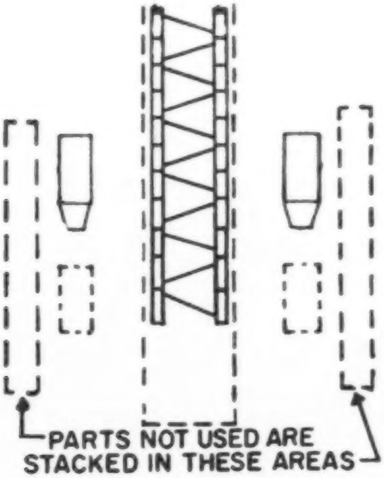
2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

c. Off-Loading on Restricted Sites (Cont).

(e) Trucks 2 and 4 drive toward uncompleted end of bridge and stop when the front of the first truck is aligned with it. Trucks 1 and 3 (w/trlrs 2 and 4) back onto site, off-load pallets, then move off of site.



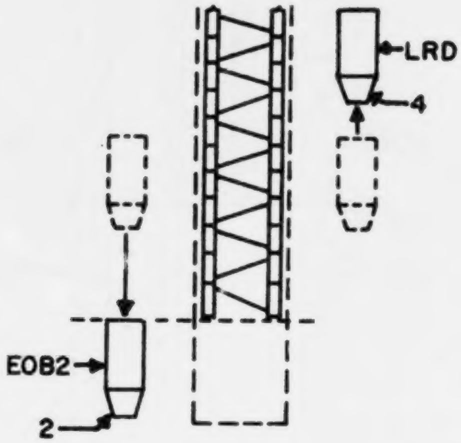
(f) Pallets on ground are off-loaded and components are used to construct 6 bays of bridge. All components not required are placed to sides of sites. Empty pallets are carried off of site.



2-14. OFF-LOADING PALLETS FROM TRANSPORT VEHICLES (Cont).

c. Off-loading on Restricted Sites (Cont).

(g) Truck 2 drives toward uncompleted end of bridge and stops when rear of truck is aligned with it. Truck 4 backs toward gap and stops 15 ft (4.6 m) from it. Both trucks off-load pallets and move off of site.



2-15. BRIDGING PHASE OPERATIONS.

a. In the organization of the MGB mission, there are six phases of the bridging operation. The purpose of this paragraph is to list and briefly describe the six phases.

(1) Pallet Off-loading. After the marking of the site has been completed, the pallets are removed from trucks and trailers. Pallets may be pulled off of trucks and trailers with the aid of an extractor cable, or trucks may dump pallets by raising the bed.

(2) Pallet Unpacking. Unpacking consists of unstrapping pallets and carrying bridge parts to the assembly site.

(3) Assembly. The assembly begins with the construction of the roller beam and ends when the bridge is opened for traffic.

(4) Disassembly. Disassembly begins with the removal of the guide markers and ends when cleaning of the bridge and erection parts is finished.

(5) Pallet Repacking. Repacking consists of carrying the bridge and erection parts from the disassembly site to the loading site and placing and strapping the parts on their assigned pallets.

(6) Pallet Reloading. Reloading consists of lifting the pallets onto the trucks and trailers.

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SECTION III. OPERATION UNDER USUAL CONDITIONS

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Assembly - Single Story - 9 through 12 Bay (Normal Site)	2-20	2-317
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Assembly - Single Story - 9 through 12 Bay (Restricted Site)	2-22	2-397
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Assembly Double Story - 2E + 1 through 2E + 12 Bay (Normal Site)	2-25	2-441
Disassembly - Double Story - 2E + 1 through 2E + 12 Bay (Normal Site - Near Bank)	2-26	2-527
Disassembly - Double Story - 2E + 1 through 2E + 12 Bay (Normal Site - Far Bank)	2-27	2-575
Assembly - Double Story - 2E + 1 through 2E + 12 Bay (Restricted Site)	2-28	2-595
Disassembly - Double Story - 2E + 1 through 2E + 12 Bay (Restricted Site - Near Bank)	2-29	2-621
Disassembly - Double Story - 2E + 1 through 2E + 12 Bay (Restricted Site - Far Bank)	2-30	2-653

2-16. ASSEMBLY - SINGLE STORY - GENERAL.

a. This section will describe step by step procedures for constructing all lengths of single story bridges. The procedures will start with the assembly of the roller beam. Marking of site, pallet off-loading and placement have been covered in earlier sections of this chapter.

b. Since the assembly procedures are different for each length of bridge, the user will be instructed to proceed to certain steps as required for the bridge that is being built.

EXAMPLE: Constructing a 5 Bay Single Story MGB.

When constructing a 5 bay, Steps 1.a.(1) through 1.a.(5) and Steps 2.a.(1) through 2.a.(15) are performed. At the end of Step 2.a.(15) the user is instructed to proceed to Step 2.a.(26) for construction of the 5 bay bridge.

DO EXACTLY THAT. DO NOT PERFORM Step 2.a.(16) through Step 2.a.(25), these steps are used when constructing another length of bridge.

At the end of Step 2.a.(26) there are no instructions to proceed to another step. The user should continue by going to the next step, which in this case is 2.a.(27). The rule to follow is: continue performing the steps in the order they are given, unless instructed to proceed to another step.

If the user is in doubt as to the steps to perform, the listing that follows is provided as a quick reference to check the steps used to construct any of the Single Story - 4 through 8 bay bridges.

To use the listing, the user reads down the column of the bridge being constructed, and performs the steps in the order listed.

Using the example of the 5 Bay bridge, the user should perform steps:

1.a.(1) through (5)
2.a.(1) through (13)
    (26) and (27)
    (30) and (31)
    (36)
  IF PUSH LAUNCHING
    (37) through (49)
    (62) through (69)
  IF JACK LAUNCHING
    (37) through (69)

2-16. ASSEMBLY - SINGLE STORY - GENERAL (Cont).

Table 2-21. Required Steps Per Bridge Length.

4 Bay		5 Bay		6 Bay	
1.a(1)thru(5) 2.a(1)thru(13) (26)and(27) (30)and(31) (36)		1.a(1)thru(5) 2.a(1)thru(15) (26)and(27) (30)and(31) (36)		1.a(1)thru(5) 2.a(1)thru(17) (26)thru(32) (36)	
PUSH	JACK	PUSH	JACK	PUSH	JACK
(37)thru(49) (62)thru(69)	(38)thru(69)	(37)thru(49) (62)thru(69)	(38)thru(69)	(37)thru(49) (62)thru(69)	(38)thru(69)

7 Bay		8 Bay	
1.a(1)thru(5) 2.a(1)thru(21) (26)(a)thru(e) (27)thru(36)		1.a(1)thru(5) 2.a(1)thru(26)(e) (27)thru(32)	
PUSH	JACK	PUSH	JACK
(37)thru(49)	(38)thru(69)	(37)thru(49) (62)thru(69)	(38)thru(69)

Once the user becomes familiar with the step by step procedures of construction, it will be possible to construct any Single Story - 4 through 8 Bay bridge by using the Building and Booming Table 2-22.

This table provides the necessary instructions to construct, boom and launch all bridges.

DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

ABBREVIATIONS AND TERMS USED IN TABLE.

BP = Building Pedestals
BSB = Bankseat Beam
LLN = Light Launching Nose
LR = Landing Roller
RB = Roller Beam

A number by itself or with one asterisk * = Number of bay to be added. This is a bay used as counterweight.

4 DECK UNITS**, 5 DECK UNITS** = Number of deck units used as counterweights.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY.

Table 2-22 - Building and Boom Table - 4 through 8 Bay Single Story

Bridge ft. Length m	26 7.9	32 9.8	38 11.6	44 13.4	50 15.2
No. of Bays	4	5	6	7	8
Nose Construction	LLN	LLN	LLN	LLN	LLN
Build And Boom	Notes a, b and c	Notes a, b and c	Notes a, b and c	Notes a, b and c	Notes a, b and c
ADD	2, Note d	2, Note d	2, Note d	2, Note d	2, Note d
Boom to and ADD	1p2 3	1p2 3	1p2 3	1p2 3	1p2 3
Boom to and ADD	1p7 4	1p7 4	1p7 4	1p7 4	1p7 4
Boom to and ADD	2p3 BSB	2p3 5	2p3 5	2p3 5	2p3 5
Boom to and ADD	2p7 Set Up LR*	2p7 BSB	2p7 6	2p7 6	2p7 6
Boom to and ADD	4p7	3p3 Set Up LR*	3p3 BSB	3p3 7	3p3 7
Boom to and ADD		5p7	3p7 5 Deck Units**	3p7 8**	3p7 8
Boom to and ADD			4p2 Set Up LR*	4p3 BSB	4p3 9**
Boom to and ADD			6p7	4p7 4 Deck Units**	4p7 10**
Boom to and ADD				5p2 Set Up LR*	5p3 BSB
Boom to and ADD				7p7	5p7 5 Deck Units**
Boom to and ADD					6p2 Set Up LR*
Boom to and ADD					8p7
Complete By:	Notes e and h	Notes e and h	Notes e,f, and h	Notes e,f, g and h	Notes e,f, g, and h

NOTES:

a. Build LLN and Bay 1 on BP.
b. Boom BSB over RB.
c. Put BP under 1p7 as Bay 1 is added.
d. Put BP under 2p4 as Bay 2 is added.
e. Remove front section of LLN before push launch.
f. Move counterweight deck units into final position.
g. Remove counterweight panels and refit BSB from temporary counterweight position to normal end of bridge position.
h. Put bridge on ground.

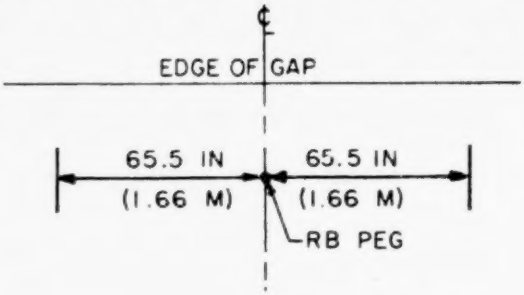
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

For Single Story - 4 through 8 Bay Bridges, PROCEED TO STEP 1.

Step 1. Placement of Roller Beam. Steps needed to set up and align the roller beam are as follows:

a. Setting up roller beam:

① Measure 65.5 in (1.66m) on each side of RB peg.

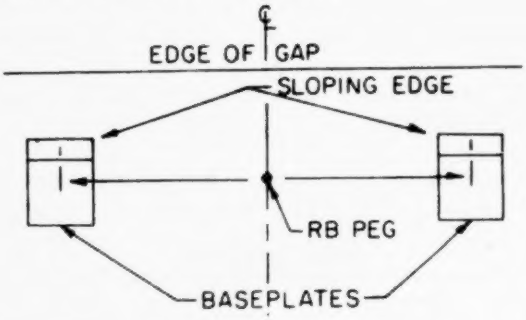


② Put fixed support baseplates in place.

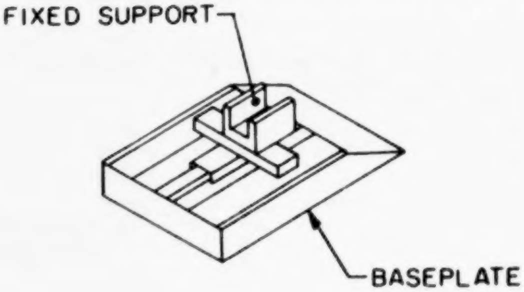
(a) Ensure that the sloping edge of baseplate faces gap.

(b) Baseplates are centered over marks.

(c) Packing (3 in x 8 in x 36 in) can be used under baseplates if bank conditions are bad.



③ Place roller beam fixed support on baseplate.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

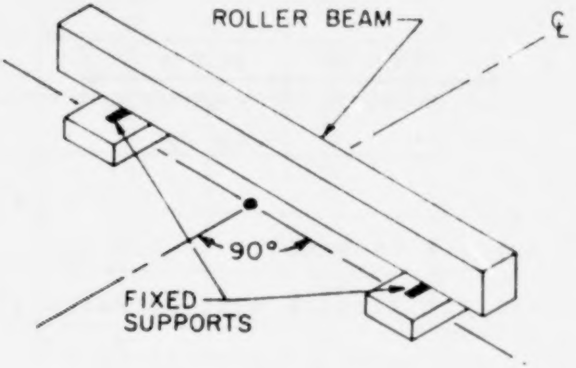
Step 1.a. (Cont).

④ Place roller beam on roller beam fixed supports.

(a) Single story support fit into pivoting head of fixed support.

(b) Ensure that the roller beam is centered over the centerline and RB peg.

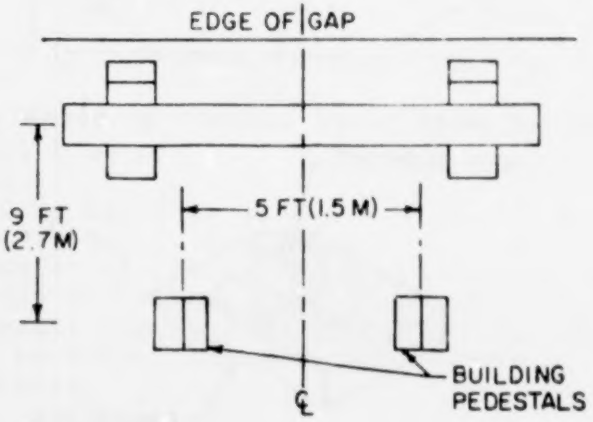
(c) Ensure that the roller beam is positioned at a right angle (90°) to the centerline.



⑤ Place building pedestals in position 9 ft (2.7 m) behind roller beam.

(a) Building pedestals are placed with the long side parallel to the centerline.

(b) Ensure that the distance between the top of pedestals is no more than 5 ft (1.5 m).



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

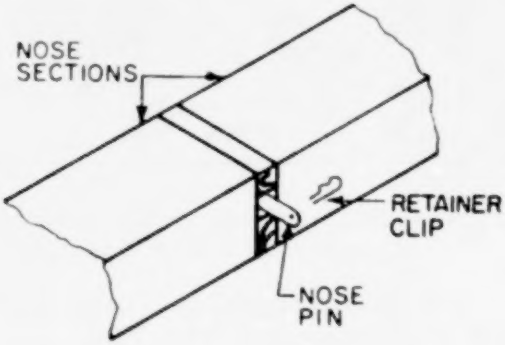
Step 2. Assembly - Single Story - 4 through 8 Bay.

a. Assembly Procedures.

① Pin front and rear sections of light launching nose together.

(a) Use nose pin to join the two sections together.

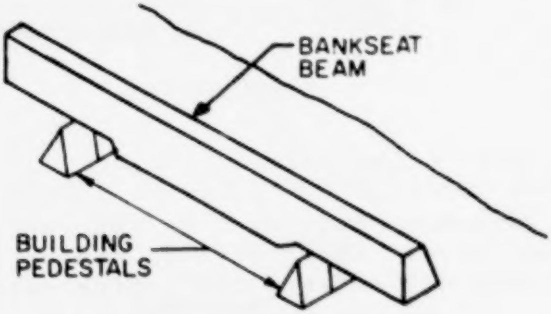
(b) Put retainer clip through the end of the nose pin.



② Place bankseat beam (BSB) on the building pedestals.

(a) Ensure that the center of the BSB is placed over the centerline.

(b) The outside of the BSB must face the gap.

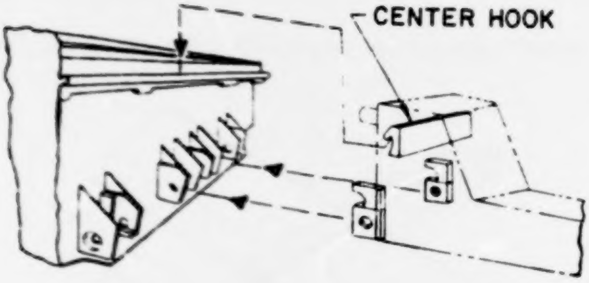


2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

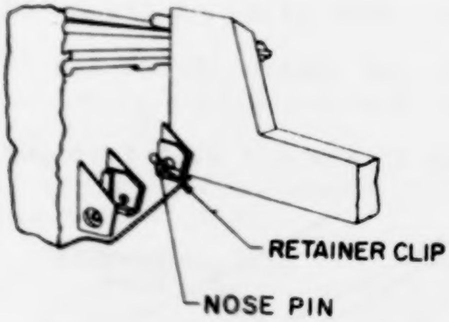
③ Connect the rear of the light launching nose to the BSB.

(a) Center hook of the light nose rear section fits into the ramp ledge of the BSB.



(b) Put a nose pin through the jaws and center bracket.

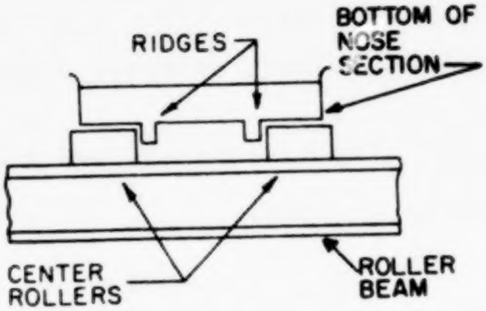
(c) Put a retainer clip through the end of the nose pin.



(d) Let launching nose rest on the center rollers of the roller beam. The ridges on the bottom of the nose sections set between the inside edges of the rollers.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

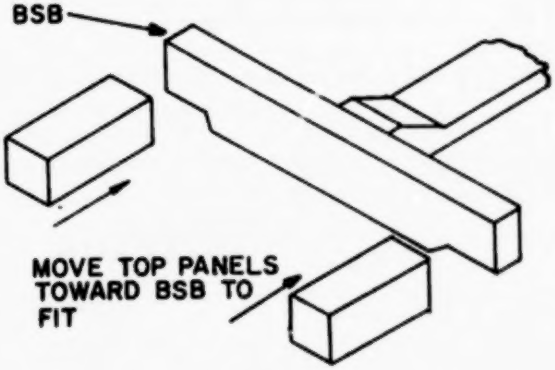


NOTE

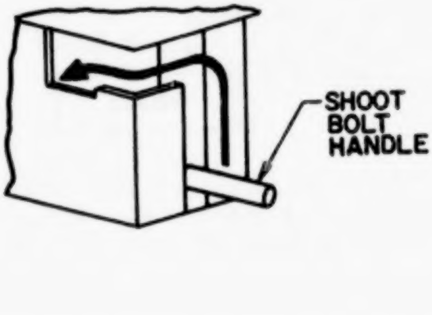
For ease of construction, the next step must be performed simultaneously by both panel crews.

④ Fit first top panel to bankseat beam.

(a) Engage dowels and sockets of both the panel and the bankseat beam.



(b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

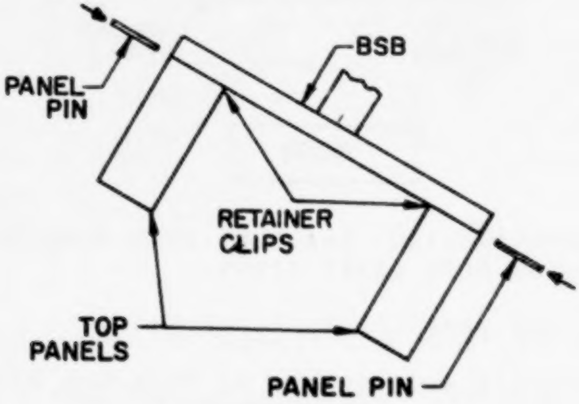
Step 2.a. (Cont).

(c) Let rear of panel down slowly. Guide bushings and slots will line up pin jaws.

(d) Insert panel pin until shoulder butts against jaw of panel.

(e) Put retainer clip through the end of panel pin.

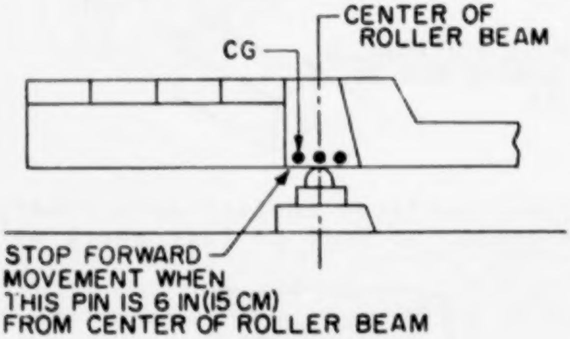
(f) DO NOT let go of panels.



NOTE

The first bay has now been built.

⑤ Unlock roller beam rollers, lift bankseat beam and top panels above pedestal, then push forward until bankseat beam is on rollers. Lock rollers.


CENTER OF ROLLER BEAM
CG
STOP FORWARD MOVEMENT WHEN THIS PIN IS 6 IN(15 CM) FROM CENTER OF ROLLER BEAM

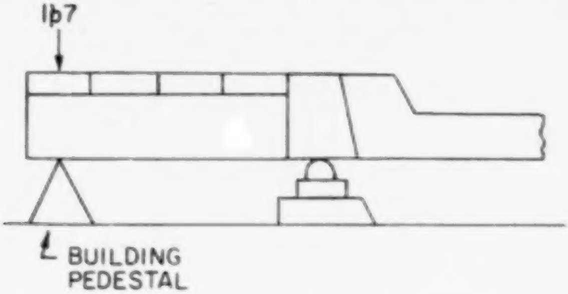
NOTE

The center of gravity (CG) of the bridge is now at the panel pin connecting the top panel and BSB. Keep the CG 6 inches (15 cm) from the center of the roller beam.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

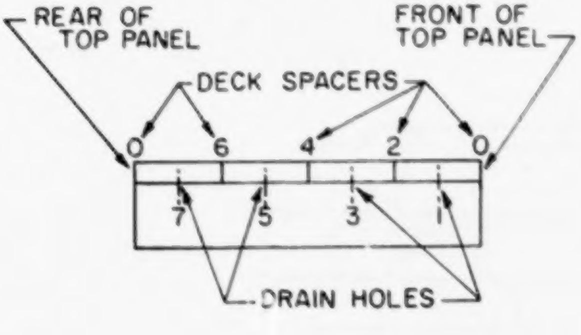
Step 2.a. (Cont).

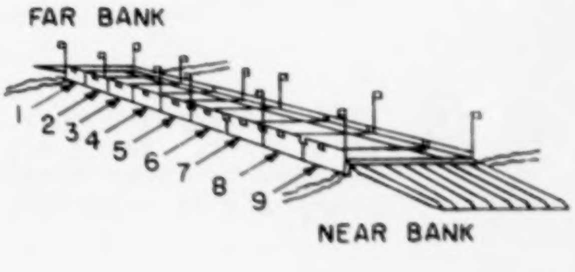
⑥ Place building pedestals under rear of Bay 1 Panel point 1p7.



NOTE

The panel point code is used to identify the location of the CG and also to identify boom and launch points of the bridge. The panel point code uses the deck spacers and drain holes in the top panels. Code and reference numbers for the panel points begin at the front of the top panel, that is the end closest to the far bank. The deck spacers are panel points 2, 4 and 6. Panel points 1, 3, 5 and 7 are the drain holes halfway between each deck spacer. The deck spacer at the rear of the top panel becomes panel point 0 of the next top panel. Top panels in the bays of bridge are numbered 1, 2, 3, 4, etc., starting with the top panel next to the far bank bankseat beam. Panel point codes are given in the following order: panel number or letter, the letter "p" for panel point, and the panel point number.



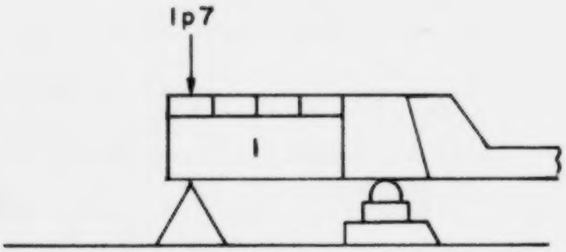


2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

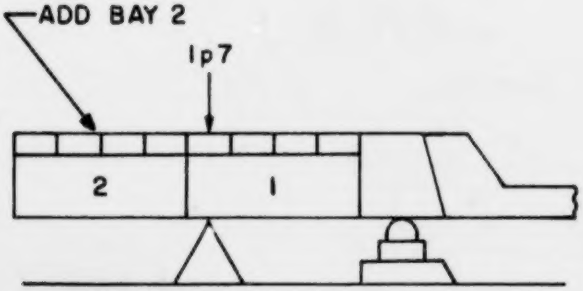
EXAMPLE

Panel point 7 of the first bay is given as 1p7.



⑦ Pin top panels of bay 2 to the top panels of bay 1.

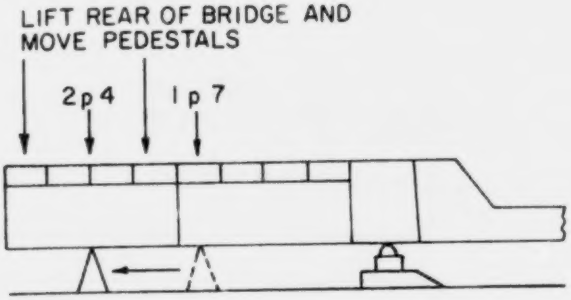
- (a) Engage dowels and sockets of both top panels.
- (b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.
- (c) Let rear of panel down. Guide bushings and slots will line up pin jaws.
- (d) Insert panel pin until shoulder butts against jaws of panel.
- (e) Put retainer clip through the end of panel pin.



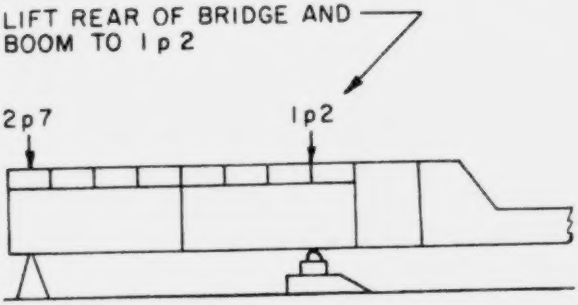
⑧ Lift girders and move pedestals under middle of Bay 2 (Panel point 2p4). Bay 2 has been built. The building pedestals are now in their final position, no further movement of pedestals is required.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

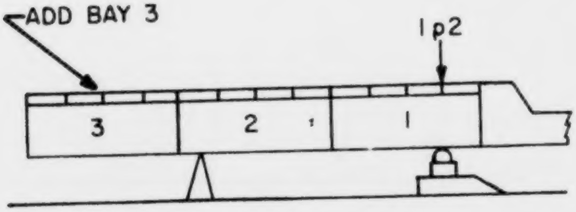
Step 2.a. (Cont).



⑨ Unlock roller beam rollers. Lift girders and boom bridge forward until panel point 1p2 is over roller beam rollers, lock rollers. Building pedestals will end up under 2p7.



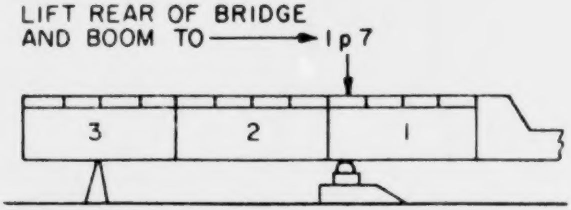
⑩ Pin top panels of bay 3 to to top panels of bay 2. DO NOT move building pedestals. No further movement of pedestals is required.



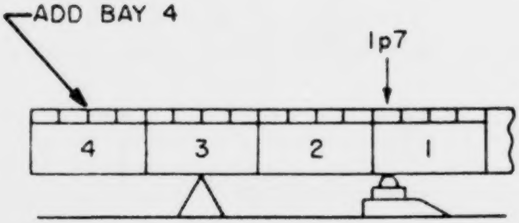
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

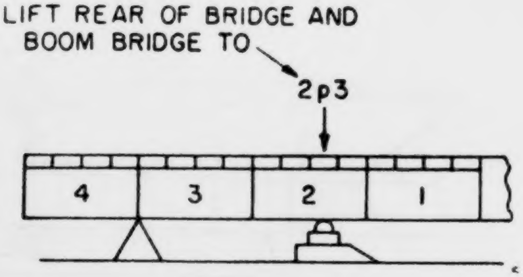
⑪ Unlock rollers and boom bridge forward until panel point 1p7 is over rollers; lock rollers.



⑫ Pin top panels of bay 4 to the top panels of bay 3.



⑬ Unlock rollers and boom bridge forward until panel point 2p3 is over rollers; lock rollers.

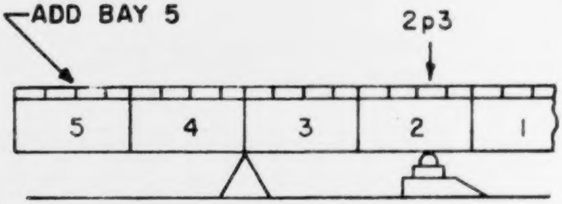


For 4 bay bridge, PROCEED TO STEP 2.a. ㉖.

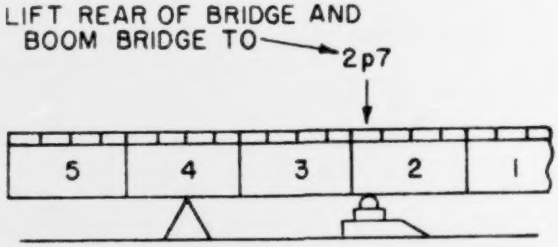
⑭ Pin top panels of bay 5 to the top panels of bay 4.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

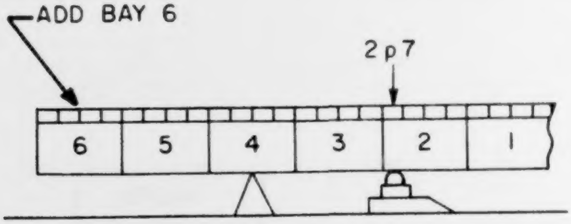


⑮ Unlock rollers and boom bridge forward until panel point 2p7 is over rollers, lock rollers.



For 5 bay bridge, PROCEED TO STEP 2.a. ㉖.

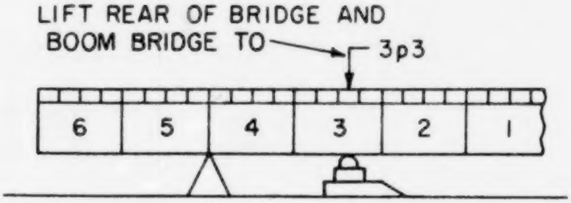
⑯ Pin top panels of bay 6 to the top panels of bay 5.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

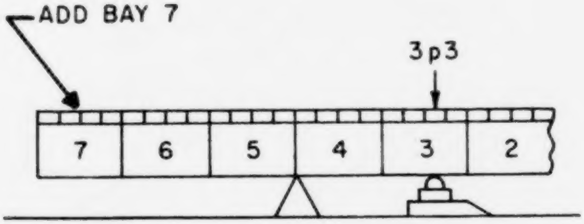
Step 2.a. (Cont).

⑰ Unlock rollers and boom bridge forward until panel point 3p3 is over rollers, lock rollers.

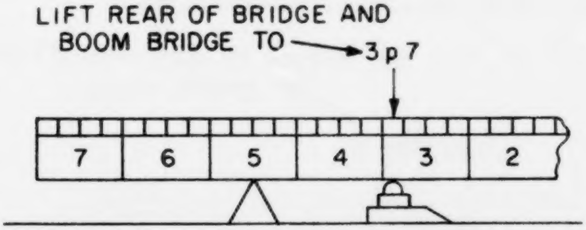


For 6 bay bridge, PROCEED TO STEP 2.a. ㉖.

⑱ Pin top panels of bay 7 to the top panels of bay 6.



⑲ Unlock rollers and boom bridge forward until panel point 3p7 is over rollers, lock rollers.



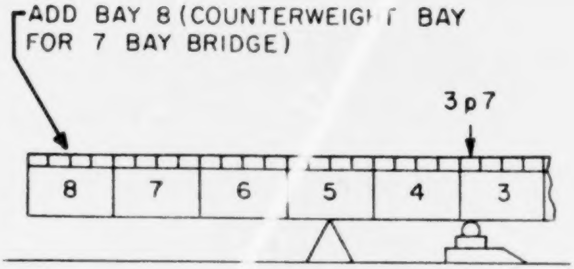
NOTE

Counterweight bays are needed when constructing 7 and 8 bay bridges. The next step is adding bay 8 to the 7 bays already built. This 8th bay is the counterweight bay for a 7 bay bridge, or the 8th bay of an 8 bay bridge.

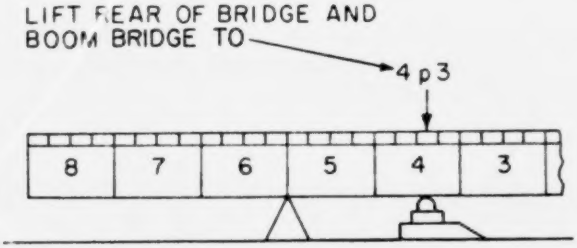
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

⑳ Pin top panels of bay 8 to the top panels of bay 7.

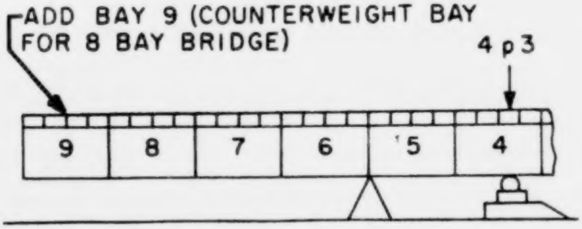


㉑ Unlock rollers and boom bridge forward until panel point 4p3 is over rollers, lock rollers.



For 7 bay bridge, PROCEED TO STEP 2.a. ㉖.

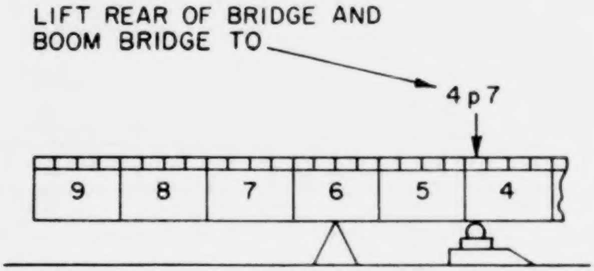
㉒ Pin top panels of bay 9 to the top panels of bay 8.



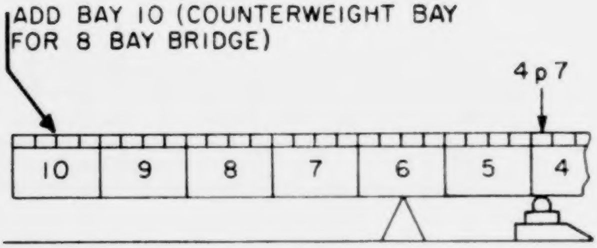
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

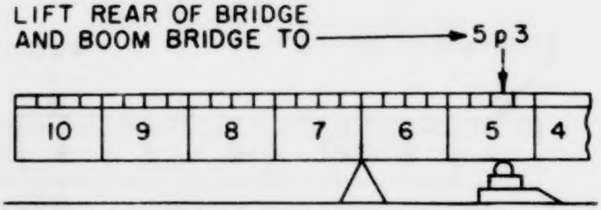
㉓ Unlock rollers and boom bridge forward until panel point 4p7 is over rollers, lock rollers.



㉔ Pin top panels of bay 10 to the top panels of bay 9.



㉕ Unlock rollers and boom bridge forward until panel point 5p3 is over rollers, lock rollers.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

NOTE

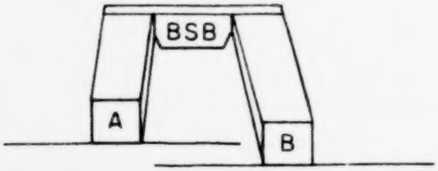
Connection of the rear BSB to top panels is described in the next step. For 7 and 8 bay bridges the panel pins WILL NOT BE put in, as the BSB is used as counterweight.

㉖ Connecting rear BSB to top panels.

NOTE

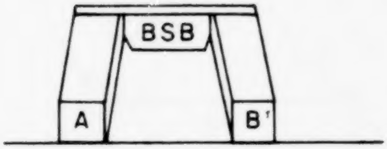
The bridge is supported on the roller beam and two building pedestals, one under each girder. The pedestals and the two girders will probably be on different levels, and not square with the BSB.

To connect the BSB to the top panels it will be necessary to level and square the two girders.



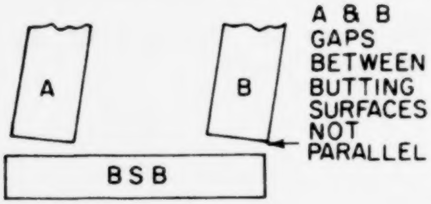
GIRDERS NOT ON SAME LEVEL

END VIEW



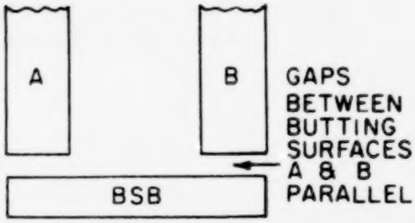
GIRDERS ON SAME LEVEL

END VIEW



GIRDERS NOT SQUARE

PLAN VIEW



GIRDERS SQUARE

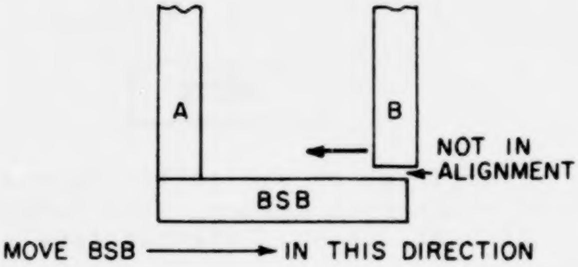
PLAN VIEW

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

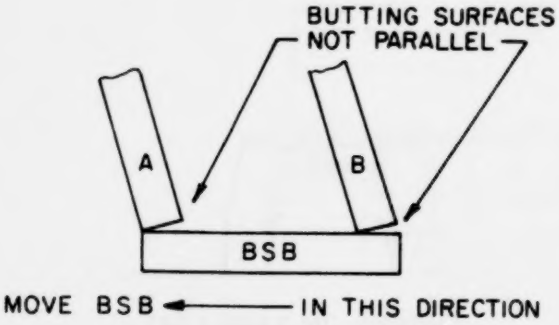
Step 2.a. (Cont).

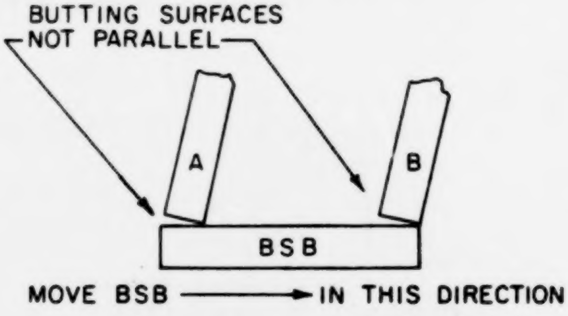
(a) Remove the building pedestal from under girder B so its end can be lowered as well as raised. Unlock roller beam roller under girder B so that it can move over the roller.

(b) Engage dowels and sockets of bankseat beam and top panel of girder A, DO NOT close shoot bolts.



(c) Move BSB sideways, if necessary, to engage dowels and sockets of the BSB and top panel of girder B.



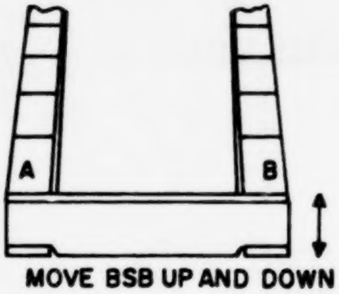


(d) Move BSB sideways in appropriate direction to make the gaps between butting surfaces parallel.

(e) Move bankseat beam up and down at the end of girder B until all shoot bolts can be closed.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

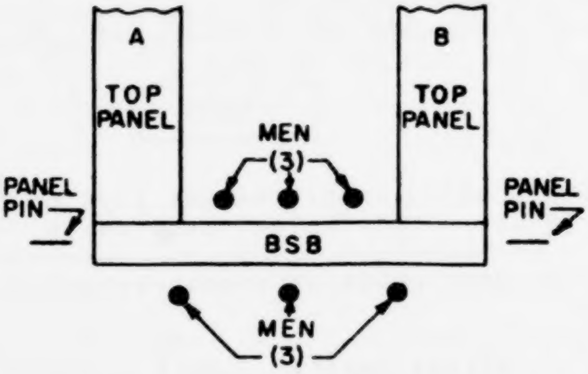
Step 2.a. (Cont).



For 7 and 8 bay bridges, PROCEED TO STEP 2.a. ㉗ .

(f) Insert panel pins into BSB and top panels as three men on inside of BSB lift, and three men on outside of BSB push down on the BSB.

(g) Put retainer clip through the end of panel pin.



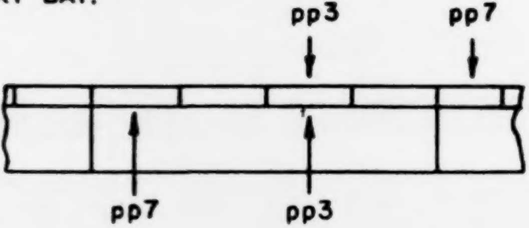
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

㉗ Unlock rollers and boom bridge 4 panel points; lock rollers.

Bridge Length	Boom To
4	2p7
5	3p3
6	3p7
7	4p7
8	5p7

IF AT pp7 OF A BAY, BOOM TO pp3 OF THE NEXT BAY.



IF AT pp3 OF A BAY, BOOM TO pp7 OF THE SAME BAY.

For 4 and 5 bay bridges, PROCEED TO STEP 2.a. ㉚ .

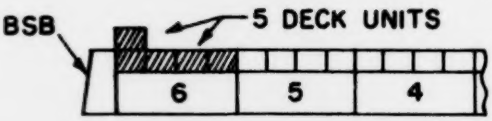
NOTE

In addition to using counterweight bays on some bridges, it is necessary to use counterweight deck units.

㉘ Position deck units as counterweights.

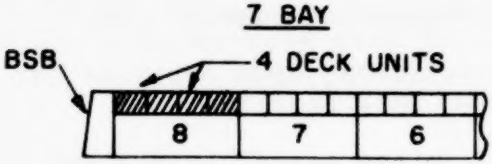
Bridge Length	No. of Deck Units
6	5
7	4
8	5

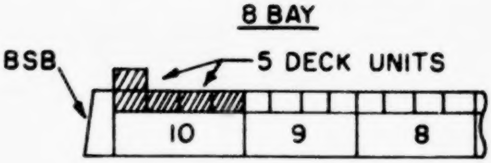
6 BAY



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

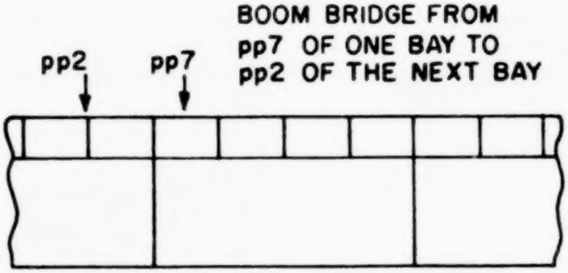
Step 2.a. (Cont).





㉙ Unlock rollers and boom bridge 3 panel points, lock rollers.

Bridge Length	Boom To
6	4p7
7	5p2
8	6p2



NOTE

At this point, all bridges (4 through 8 bay) are positioned with their CG over the roller beam.

Bridge Length	CG
4	2p7
5	3p3
6	4p2
7	5p2
8	6p2

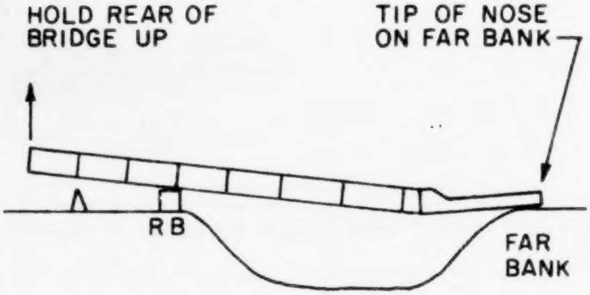
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

㉚ Set up landing roller under launching nose.

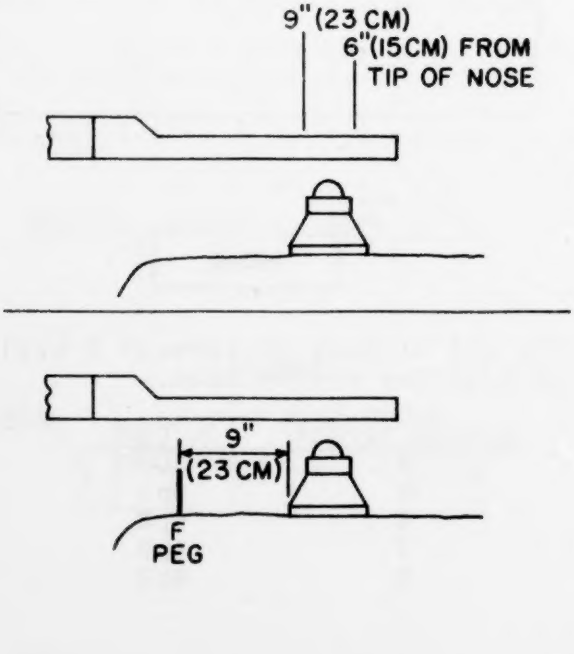
(a) Lift rear of bridge until launching nose rests on far bank, hold rear of bridge in this position.

(b) One man will carry landing roller across bridge and launching nose to far bank.



(c) Lower rear end of bridge to allow the landing roller to be placed under launching nose.

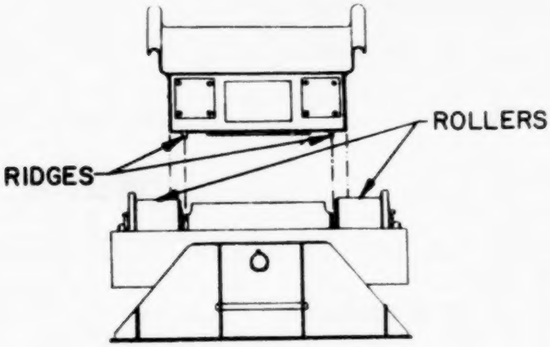
(d) Position landing roller under the launching nose, between 6 to 9 inches (15 to 23 cm) from tip of nose, OR the edge of the landing roller 9 inches (23 cm) from the F peg.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

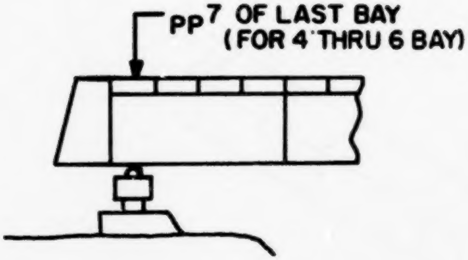
Step 2.a. (Cont).

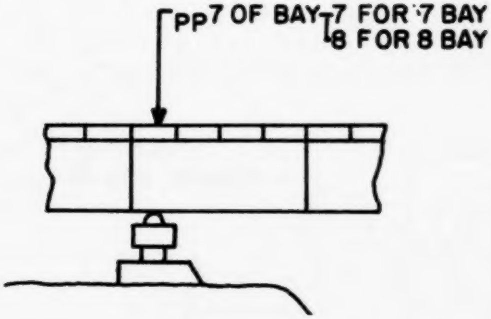
(e) Carefully let nose down onto landing roller. Ensure that the nose sets in the rollers and that the landing roller is positioned squarely under the nose. Man on far bank sits on tip of nose section to hold nose down.



㉛ Unlock rollers and slowly boom bridge to panel point given below, lock rollers.

Bridge Length	Boom To
4	4p7
5	5p7
6	6p7
7	7p7
8	8p7



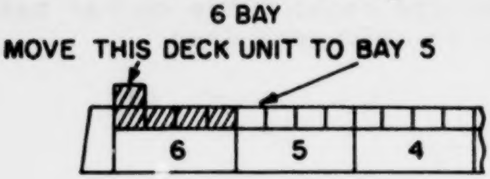


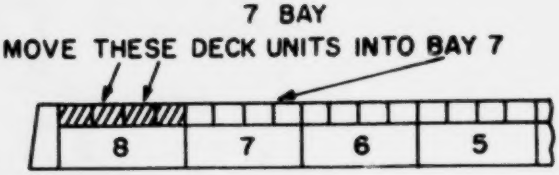
For 4 and 5 bay bridges, PROCEED TO STEP 2.a. ㊱.

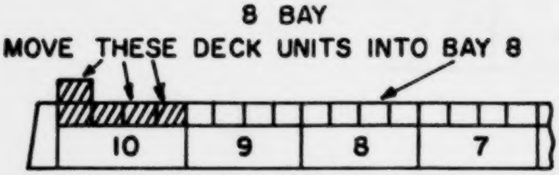
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

㉜ Move counterweight deck units into their final position in finished bridge.





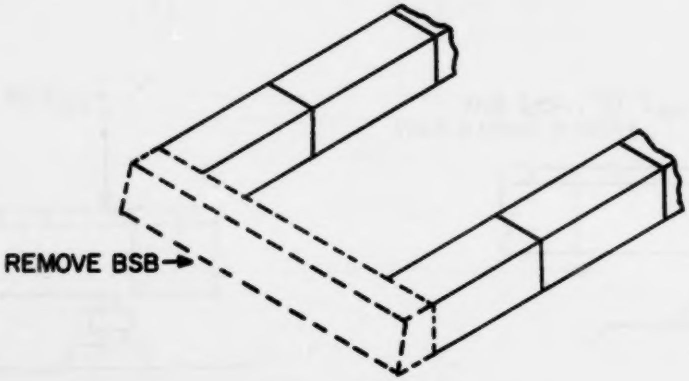


For 6 bay bridge, PROCEED TO STEP 2.a. ㊱ .

㉝ Remove BSB temporarily.

(a) With six men lifting BSB, unlock shoot bolts.

(b) Remove BSB, and place it on the ground near the end of bridge.

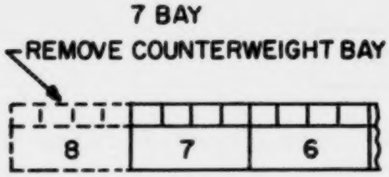


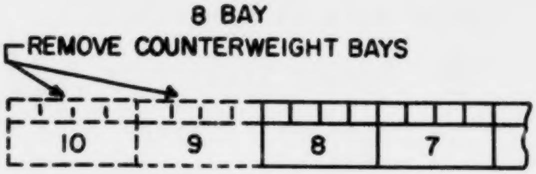
㉞ Remove counterweight bays of bridge.

Bridge Length	Remove Bay(s)
7	8
8	10 and 9

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

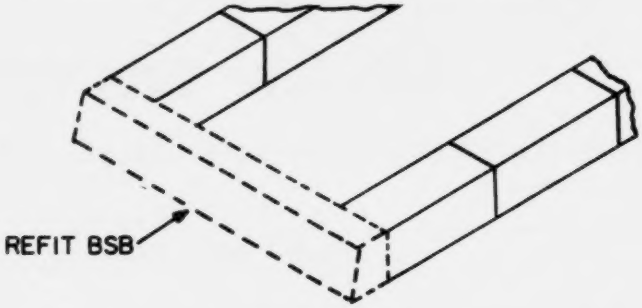




㉟ Refit BSB to end of bridge.

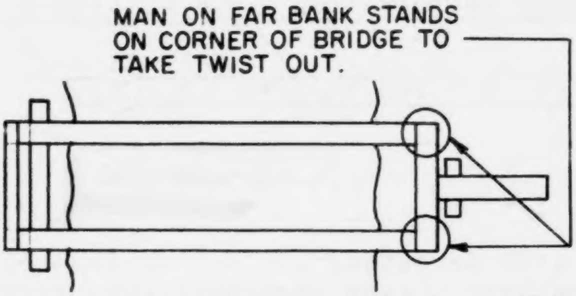
(a) Engage dowels and sockets of BSB and top panels, close shoot bolts.

(b) Put panel pin through BSB and top panel.



NOTE

Due to uneven banks, the bridge may have a "twist" in it which will make insertion of the panel pins very difficult. To overcome this "twist", have the man on the far bank stand on the corner of the bridge. This may require a second man if "twist" is severe.


MAN ON FAR BANK STANDS ON CORNER OF BRIDGE TO TAKE TWIST OUT.

(c) Put retainer clip through the end of panel pin.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

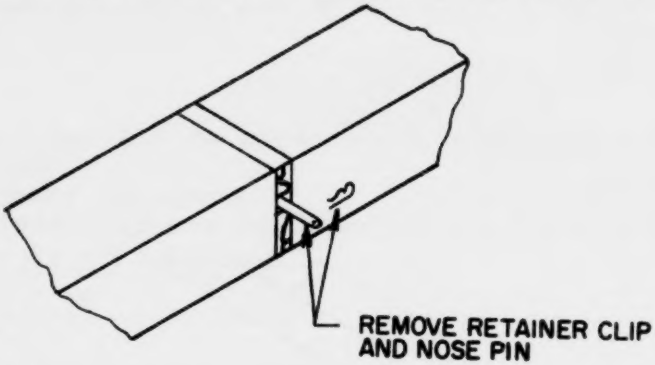
Step 2.a. (Cont).

NOTE

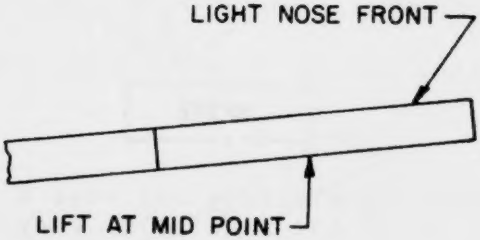
If bridge is to be push launched, the front section of light nose must be removed.

㊱ Remove light nose front section.

(a) Remove retainer clip from nose pin, then remove nose pin.



(b) Lift light nose front at mid-point and remove front nose section.



For push launch, perform Step 2.a. ㊲ then proceed.

For jack launch, proceed to Step 2.a. ㊳.

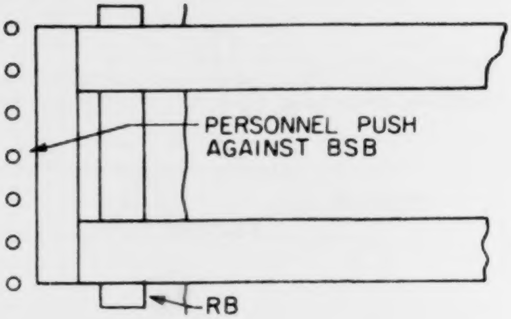
WARNING

Bridge will be pushed off roller beam by hand, DO NOT use carrying bars. Keep personnel away from the sides of the bridge, push from the rear only.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

(37) Unlock roller beam rollers and push bridge off rollers onto the ground.



(38) Take jack, jack handle, jack post and one piece of packing (3in x 8 in x 36 in) to far bank.

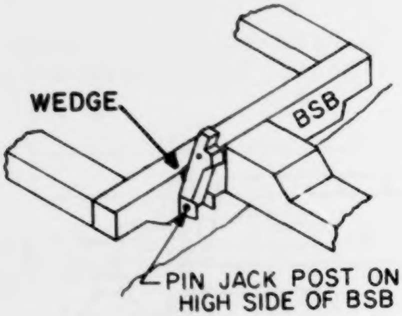
WARNING

Death or severe injury may result from using jacks on the inside of the bankseat beam.

(39) Pin a jack post to the outside jack post bracket on the far bank bankseat beam, on high side only.

(a) Put a retainer clip through the end of nose pin.

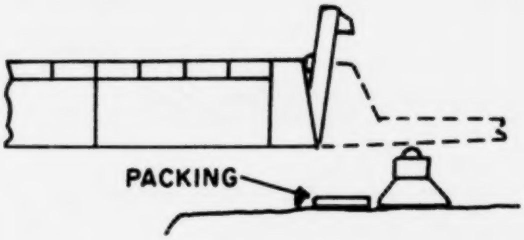
(b) The wedge on the jack post is between the post and ramp ledge of BSB.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

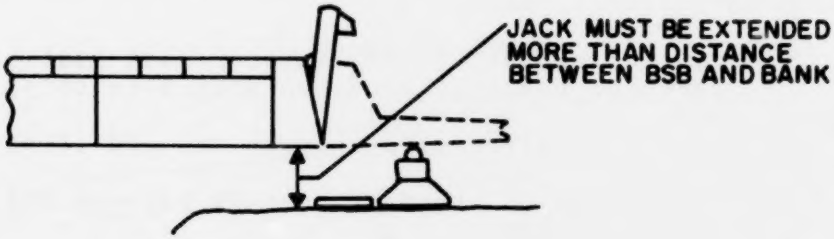
Step 2.a. (Cont).

㊵ Place one piece of packing on the ground under the jack post, and parallel to the BSB. Packing used is 3 in x 8 in x 36 in.

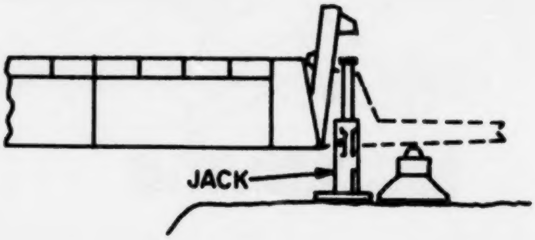


NOTE

Before placing the jack under the jack post, the jack ram must be extended until more ram is showing than the distance from the ground and BSB. DO NOT PULL on the head of jack, operate jack by hand to height required.


JACK MUST BE EXTENDED MORE THAN DISTANCE BETWEEN BSB AND BANK

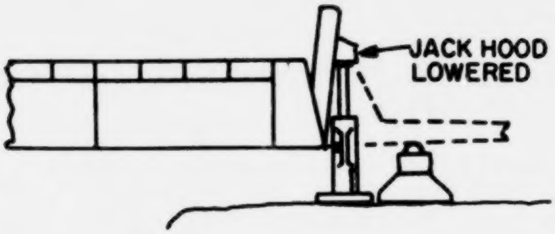
(41) Operate jack by hand to height required. Place jack on packing so the longside of base of jack is parallel to the BSB.



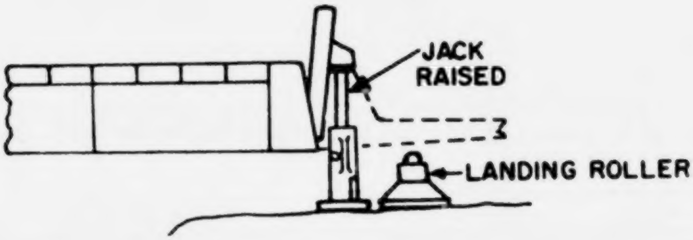
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

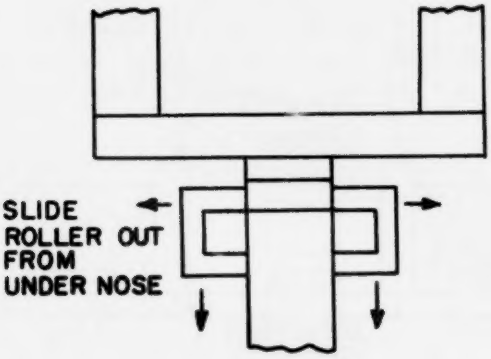
(42) Lower jack hood of jack post to head of jack. Ensure that head of jack fits into recess in jack hood.



(43) Operate jack to raise bridge until the rear section of nose is clear of landing roller.



(44) Slide the landing roller out from under the launching nose.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

㊺ Operate jack to lower bridge to the ground.

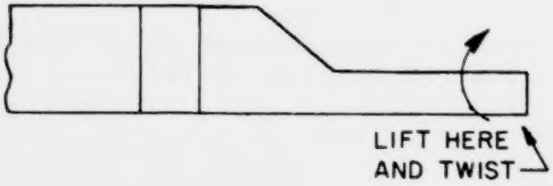
㊻ Remove jack, jack post and packing.

㊼ Remove retainer clip and nose pin from the rear nose section and BSB.

㊽ Remove rear section of light nose from BSB, and move it to the side of the site.

(a) Lift the small end of the nose slightly.

(b) Twist the nose section to free center lug from ramp ledge.



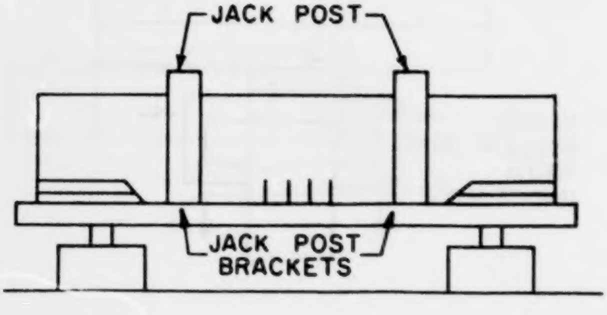
㊾ Return jack, jack post, jack handle and packing back to the near bank.

For any bridge that was push launched, PROCEED TO STEP 2.a. (62).

㊿ Pin a jack post to the outside jack post bracket on each end of the near bank BSB.

(a) Put a retainer clip through the end of the nose pin.

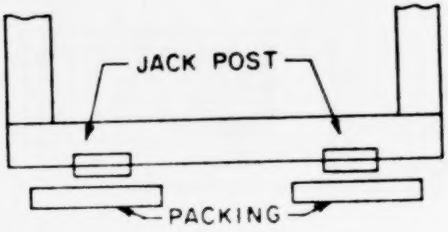
(b) The wedge on the jack post is between the post and ramp ledge of the BSB.



2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

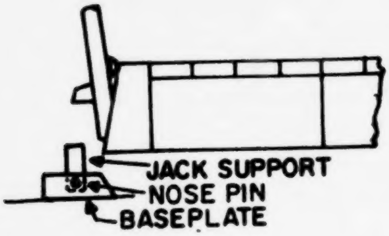
Step 2.a. (Cont).

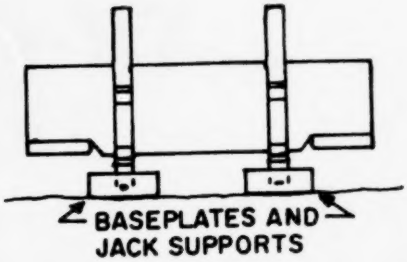
(51) Place 1 piece of packing (3 in x 8 in x 36 in) on the ground under the jack post, and parallel to the BSB.



NOTE

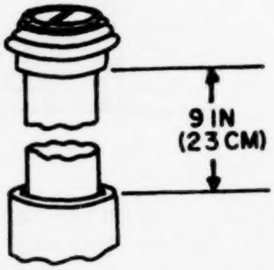
The single story baseplate with jack support can be used if ground conditions are bad.





NOTE

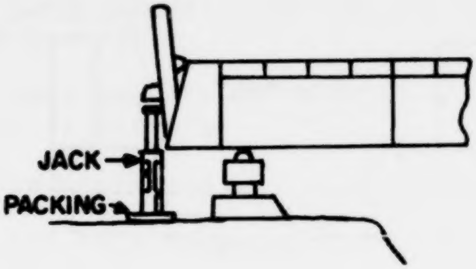
Before placing the jack under the jack post, the jack ram must be extended 9 inches (23 cm). DO NOT pull on the head of the jack.



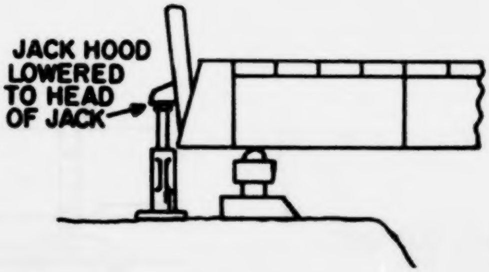
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

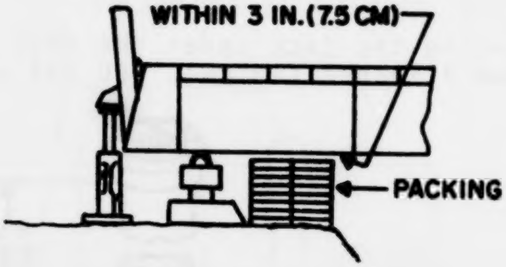
(52) Operate the jack by hand to the height required. Place the jack on packing so the longside of the jack base is parallel to the BSB.



(53) Lower the jack hood to the jack head. Ensure that the jack head fits into the recess in the jack hood.



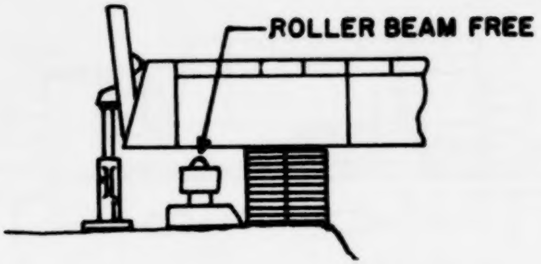
(54) Stack packing under the bridge girders until the packing is within 3 inches (7.5 cm) of the bottom of the girders.



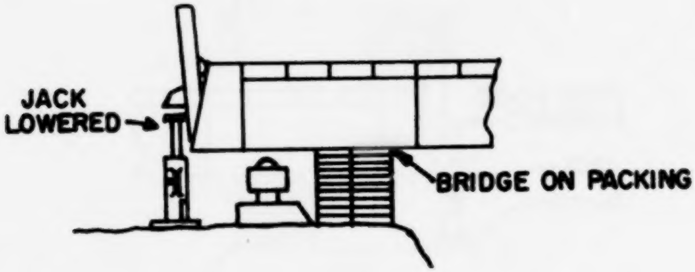
(55) Operate jacks to raise the bridge from the roller beam. Continue to raise bridge until more packing can be inserted between the stack and girder.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

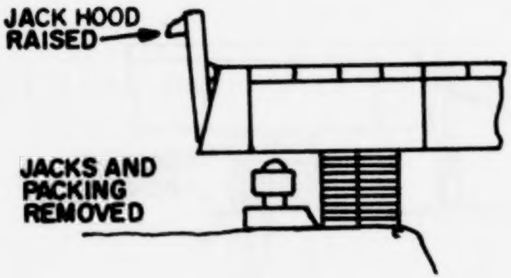
Step 2.a. (Cont).



(56) Operate jacks to lower bridge onto packing. Stop lowering when the jack is free of the jack hood. DO NOT lower jack all the way.



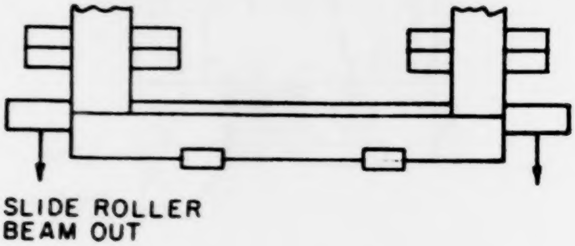
(57) Remove the jacks and packing from under the jack posts. Secure the jack hood in the top of the jack post.



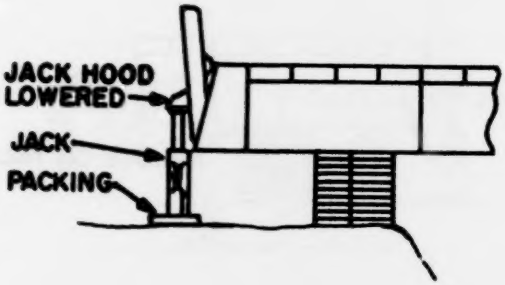
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

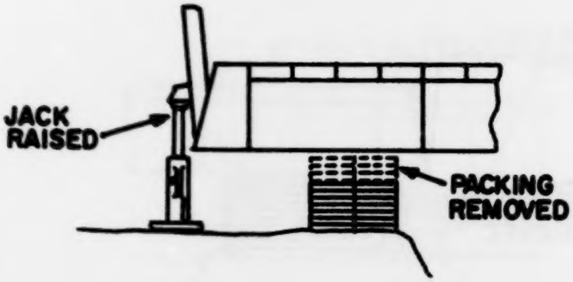
(58) Slide the roller beam out from under the end of bridge and disassemble.



(59) Place packing and jacks under the jack posts. Lower jack hood to jack head.



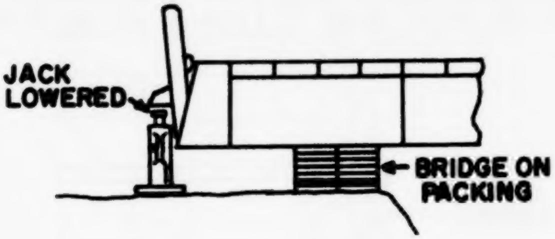
(60) Raise jacks to take weight of bridge off of packing. Remove no more than 3 layers of packing.



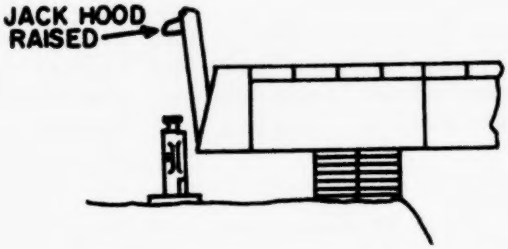
(61) Lower the bridge until the jacks are almost completely down. Ensure that the jacks will be free to be removed when the bridge rests on packing.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

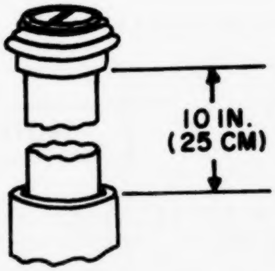
Step 2.a. (Cont).



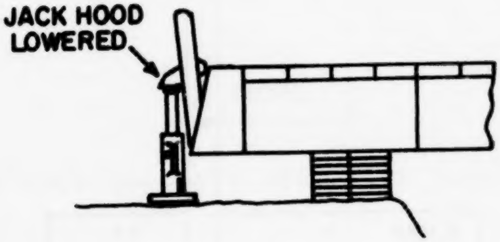
(a) Lift jack hoods from jacks and secure in top teeth of post.



(b) Remove the jacks and operate them by hand to extend ram 10 in (25 cm).



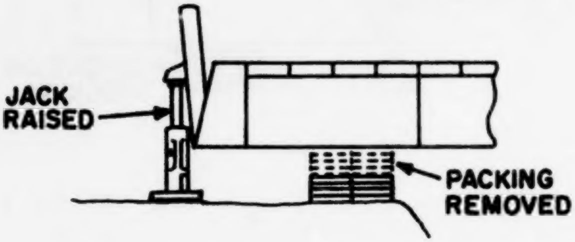
(c) Place jacks under posts and lower hood to jack head.



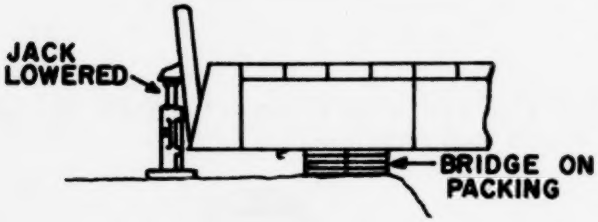
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

(d) Operate the jacks to raise the bridge from the packing. Remove no more than 3 layers of packing.



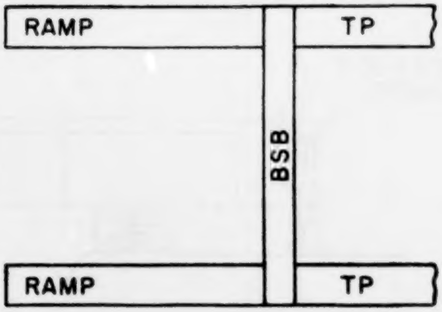
(e) Operate the jacks to lower the bridge onto packing or bank. If lowered onto packing repeat (a) through (d) to reposition jacks to get the bridge onto the bank. Remove jack posts, packing and jacks.



NOTE

Make sure that antilift lugs are engaged on all ramp units except center unit.

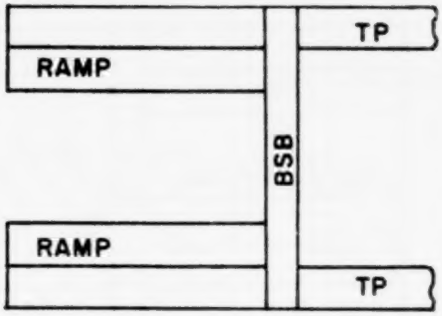
(62) Hook outside ramp units on near bankseat beam.



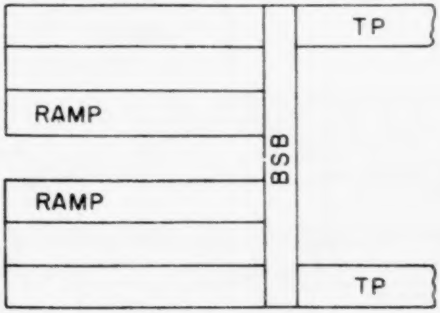
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

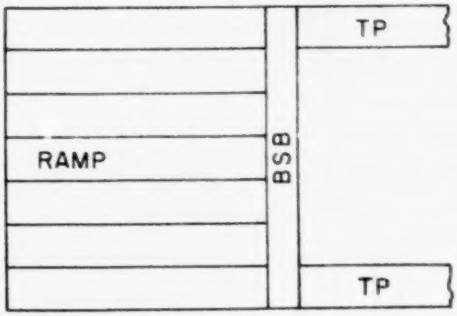
(63) Hook second ramp units next to outside ramp unit.



(64) Put third ramp unit next to second ramp unit.



(65) Hook center ramp unit on bankseat beam and drop other end to ground.



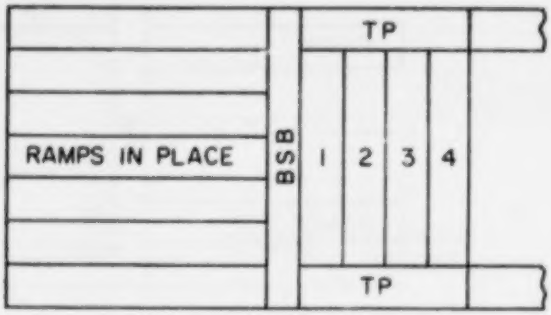
NOTE

Bankseat beam does not have anti-lift lugs for center ramp unit.

2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

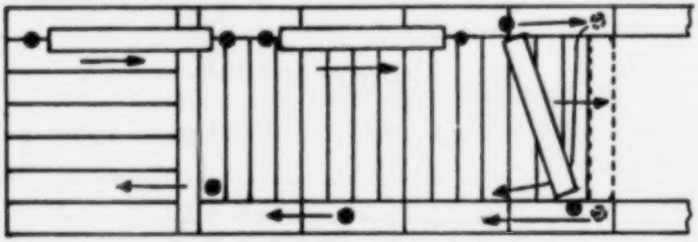
(66) Starting on near bank side of bridge, hook deck units on inside top panel rails.



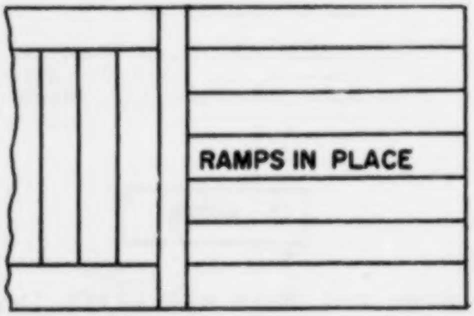
FIRST FOUR DECK UNITS IN PLACE

NOTE

One method of placing deck units is to carry them single file up one side of the bridge, cross it, then place deck unit and walk off the bridge down the other side.



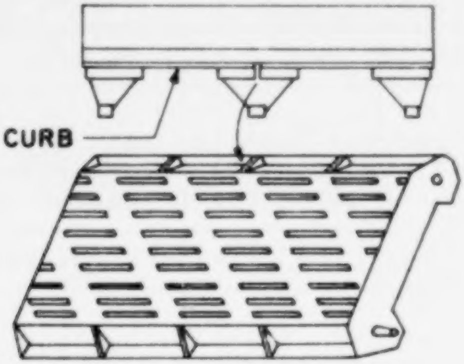
(67) Put ramp units on far bank end of bridge.



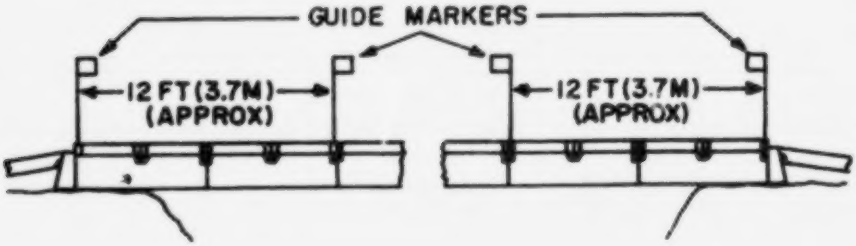
2-17. ASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

(68) Hook all curbs on outside edges of bridge. Start on near bank end of bridge.



(69) Put bridge guide markers in place.



NOTE

After the bridge has passed inspection, put bridge classification signs in place. Make sure that all erection equipment is away from roadway. The bridge is now ready to use.

2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY.

a. This paragraph describes the step by step procedures for the disassembly of all the Single Story - 4 through 8 bay bridges.

b. The disassembly procedures are basically the reverse of assembly, but there are differences. Because of these differences the user is advised to follow the step by step procedures carefully, see Table 2-23.

c. Once the user becomes familiar with the step by step procedures of disassembly, it will be possible to disassemble any Single Story - 4 through 8 bay bridge by using the De-Launch Table 2-24.

d. This table provides the necessary instructions to disassemble and de-launch all bridges.

e. DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

TABLE 2-23. Required Steps Per Bridge Length.

4	5	6	7	8
1.a and b 2.a(1)thru(30) (33) (36)and(37) (50)thru(60)	1.a and b 2.a(1)thru(30) (33) (36)and(37) (48)thru(60)	1.a and b 2.a(1)thru(30) (33) (36)and(37) (46)thru(60)	1.a and b 2.a(1)thru(37) (42)thru(60)	1.a and b ALL STEPS 2.a(1)thru(60)

2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Table 2-24 - De-launch Table - 4 thru 8 Bay Single Story

Bridge ft. Length m	26 7.9	32 9.8	38 11.6	44 13.4	50 15.2
No. of Bays	4	5	6	7	8
Nose Construction	LLN	LLN	LLN	LLN	LLN
Build	Notes a, b, c and d	Notes a, b, c and d	Notes a, b, c and d	Note a	Note a
REMOVE				BSB	BSB
ADD and/or Boom To	2p7	3p3	5 deck units 4p2	8, BSB and 4 Deck Units	9, 10, BSB and 5 Deck Units
ADD and/or				Notes b, c and d	Notes b, c and d
REMOVE	LR	LR	LR		
Boom to and REMOVE	2p3 BSB	2p7 BSB	3p7 5 deck units	5p2 LR	6p2 LR
Boom To and REMOVE	1p7 4	2p3 5	3p3 BSB	4p7 4 deck units	5p7 5 deck units
Boom to and REMOVE	1p2 Note e 3	1p7 4	2p7 6	4p3 BSB	5p3 BSB
Boom To and REMOVE	BSB Note f 2	1p2 Note e 3	2p3 5	3p7 8	4p7 10
Boom To and REMOVE	Note g 1	BSB Note f 2	1p7 4	3p3 7	4p3 9
Boom To and REMOVE		Note g 1	1p2 Note e 3	2p7 6	3p7 8
Boom To and REMOVE			BSB Note f 2	2p3 5	3p3 7
Boom To and REMOVE			Note g 1	1p7 4	2p7 6
Boom To and REMOVE				1p2 Note e 3	2p3 5
Boom To and REMOVE				BSB Note f 2	1p7 4
Boom To and REMOVE				Note g 1	1p2 Note e 3
Boom to and REMOVE					BSB Note f 2
Boom To and REMOVE					Note g 1
Complete By:	Notes h and i	Notes h and i	Notes h and i	Notes h and i	Notes h and i

NOTES:

a. Install RB under RBSB
b. Attach LLN
c. Install LR
d. Put BP 12 ft (3.7m) behind RB
e. Move BP to 2p7
f. Move BP to 1p7
g. BSB over BP
h. Remove LLN
i. Remove BSB

ABBREVIATIONS:

BP = Building Pedestals
BSB = Bankseat Beam
LLN = Light Launching Nose
LR = Landing Roller
RB = Roller Beam
RBSB = Rear Bankseat Beam

2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 Bay (Cont).

This paragraph provides the steps necessary to disassemble all of the Single Story - 4 through 8 - MGB on the original near bank. The bridge can be disassembled on the original far bank or near bank. If the bridge is to be disassembled on the far bank, the erection equipment and launching nose parts must change sides.

Step 1. Preparation for Disassembly.

a. If pumps, hoses and water are available, the bridge, erection and link components should be washed before loading them on pallets. When washing is possible the parts are taken from the bridge to the washing area loaded on the proper pallet.

b. If washing is not possible the parts are loaded on the proper pallet.

Step 2. Disassembly

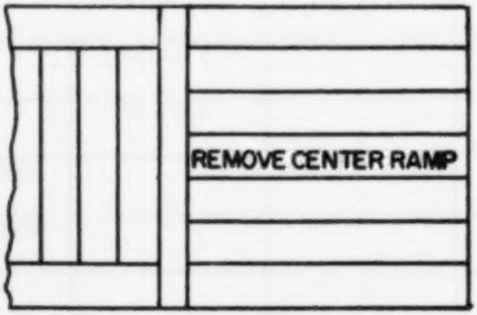
a. Steps needed to disassemble the bridge are as follows:

① Remove bridge classification signs.

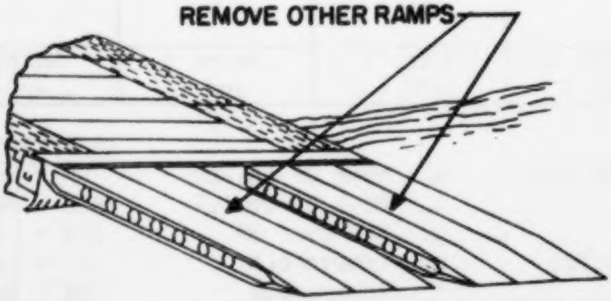
② Remove bridge guide markers.

③ Remove all curbs.

④ Remove center ramp unit on far bank.



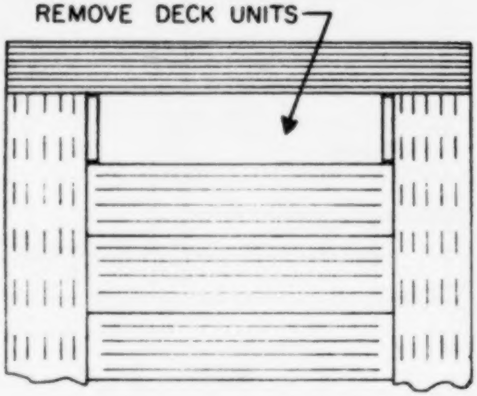
⑤ Remove the remaining ramp units on far bank.



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

⑥ Remove all deck units. Start on far bank end of bridge.

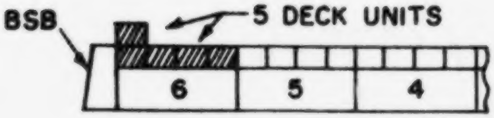


NOTE

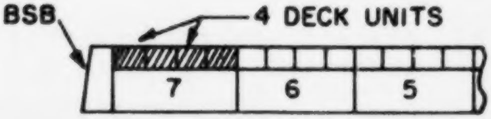
For bridges requiring counter weights (6 through 8 bay) leave the required number of deck units in place in the near bank end of bridge.

Bridge Length	No. of Deck Units
6	5
7	4
8	5

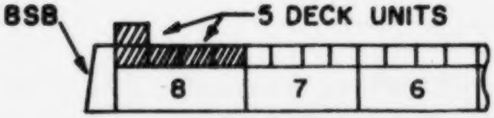
6 BAY



7 BAY



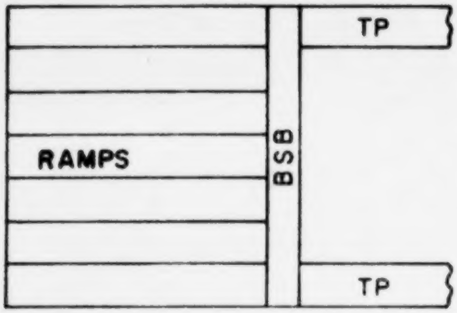
8 BAY



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

⑦ Remove ramp units on near bank.



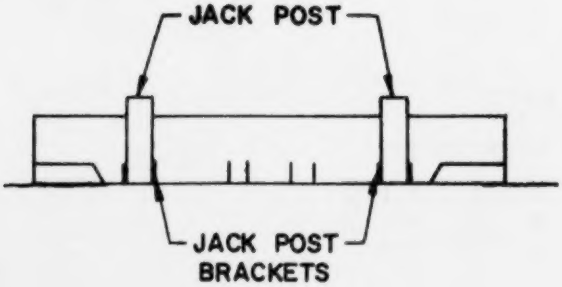
NOTE

The near bank end of bridge is always raised and placed on a roller beam before the far bank is raised.

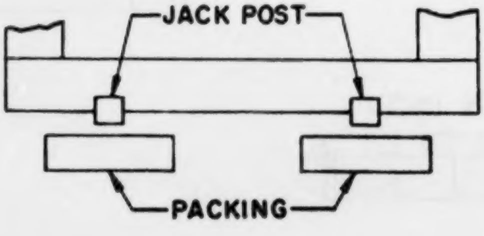
⑧ Pin a jack post to the outside jack post bracket on each end of the near bank BSB.

(a) Put a retainer clip through the end of the nose pin.

(b) The wedge on the jack post is between the post and ramp ledge of the BSB.



⑨ Place 1 piece of packing (3 in x 8 in x 36 in) on the ground under the jack post, and parallel to the BSB.

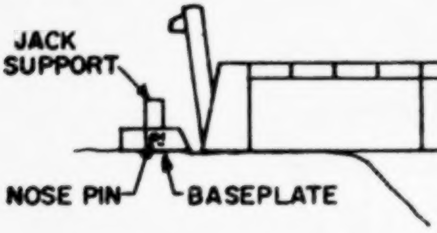


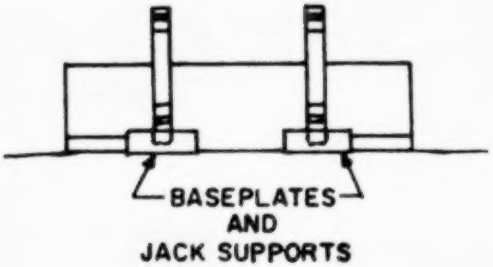
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

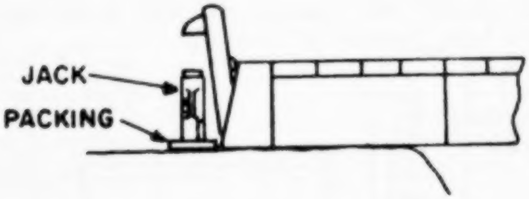
NOTE

The single story baseplate with jack support can be used if ground conditions are bad.

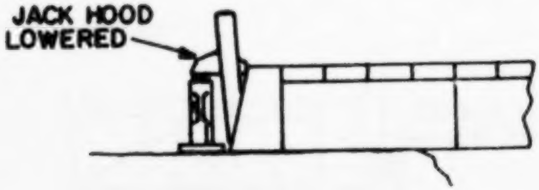




⑩ Place jack on packing so the longside of jack base is parallel to BSB.



⑪ Lower jack hood of jack post to head of jack. Ensure that head of jack fits into recess in jack hood.



⑫ Operate jacks to raise bridge. Stop when the jacks are completely extended.

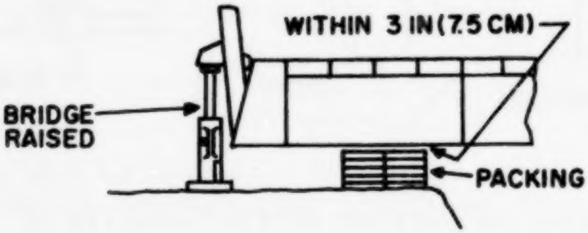
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

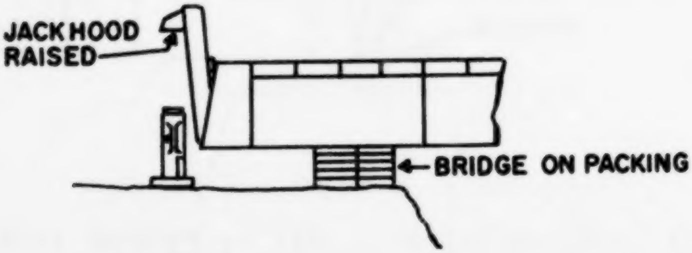
NOTE

It is necessary to place packing under the girders as the bridge is being raised. Packing is placed as close to the edge of gap as is possible to provide space for the roller beam.

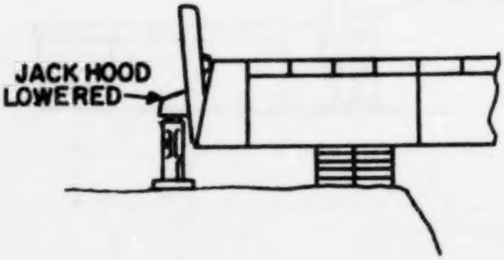
⑬ Place packing under girders until the packing is within 3 in (7.5 cm) of girder.



⑭ Operate jacks to lower bridge onto packing. Secure jack hood in top teeth of post.



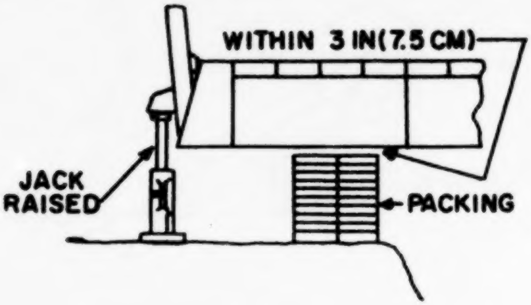
⑮ Push jack head all the way down. Reposition jack hood on head of jack.



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

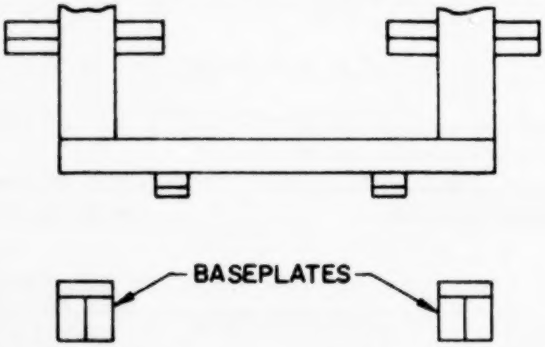
⑯ Operate jacks to raise bridge. Place packing under girder as bridge is raised until packing is within 3 in (7.5 cm) of girder.



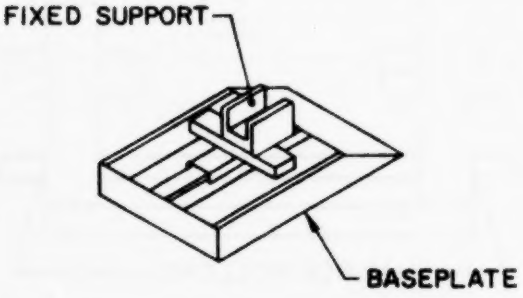
⑰ Repeat Steps (14) through (16) to raise bridge high enough to slide assembled roller beam under the end of bridge. Remove jacks and packing.

⑱ Assemble roller beam near the near bank end of bridge.

(a) Put fixed support base plates on ground near the end of bridge. Sloping edge of baseplate faces gap.



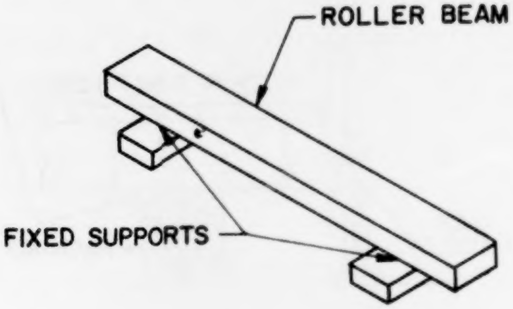
(b) Place roller beam fixed supports on baseplates.



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

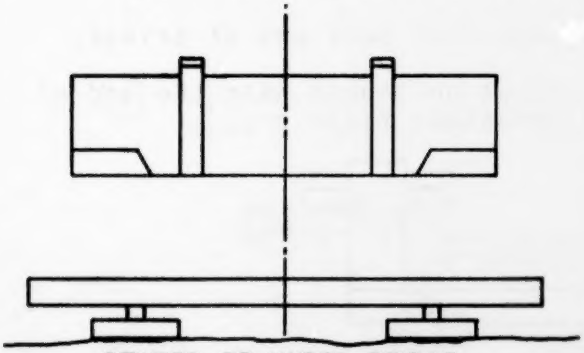
Step 2.a. (Cont).

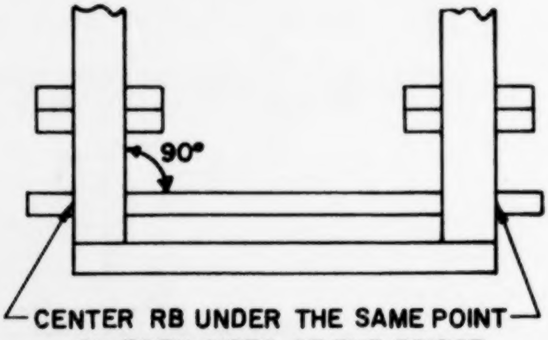
(c) Place roller beam on roller beam fixed supports.



⑲ Slide roller beam under the end of bridge.

(a) Ensure that the roller beam is centered under the bridge.

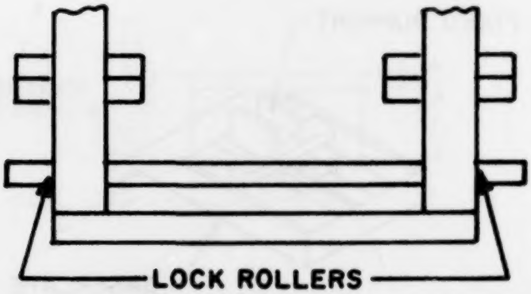

CENTER RB UNDER BRIDGE



CENTER RB UNDER THE SAME POINT ON BOTH SIDES OF THE BRIDGE

(b) Ensure that the roller beam is positioned at a right angle (90°) to the bridge.

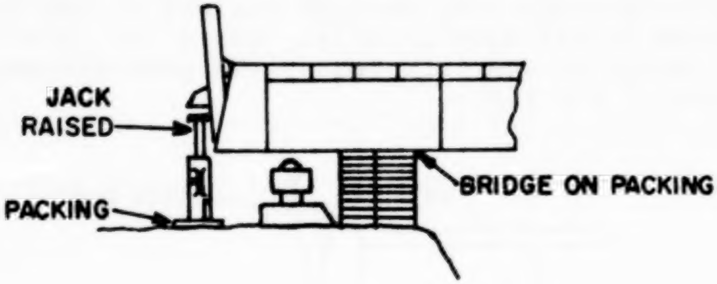
(c) Ensure that the roller beam rollers are locked.


LOCK ROLLERS

2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

⑳ Place packing and extended jacks under jack posts. Lower jack hoods to jack heads.



NOTE

Jacks must be extended more than the distance between roller beam rollers and bottom of girder.

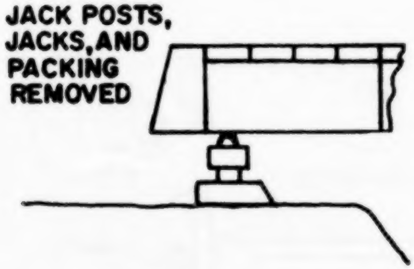
㉑ Lowering bridge onto roller beam.

(a) Operate jacks to raise bridge from packing.

(b) Remove packing one layer at a time as bridge is lowered.

(c) Operate jacks to lower bridge onto roller beam.

(d) Remove jacks, jack posts and all packing.



㉒ Take 1 jack, jack post and 1 piece of packing to the far bank.

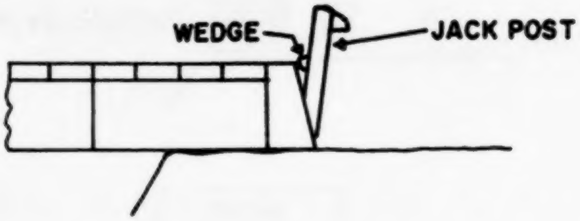
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

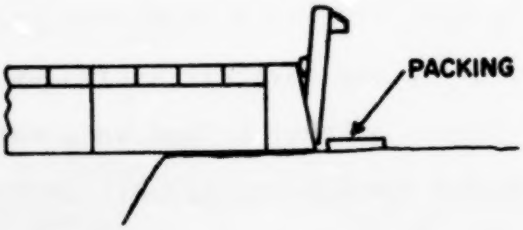
㉓ Pin a jack post to the outside jack post bracket on one end of the BSB.

(a) Put a retainer clip through the end of the nose pin.

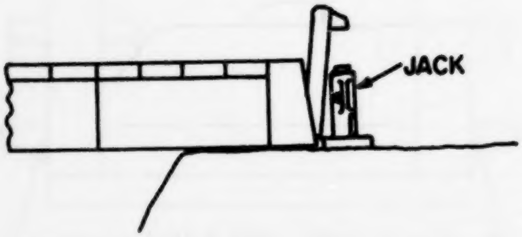
(b) The wedge on the jack post is between the post and ramp ledge of the BSB.



㉔ Place 1 piece of packing on the ground under the jack post and parallel to the BSB.



㉕ Place jack on packing so the longside of jack base is parallel to the BSB.



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

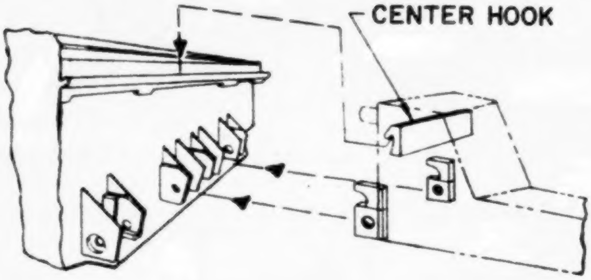
Step 2.a. (Cont).

NOTE

If possible, the light launching nose should be connected to the BSB before raising the bridge.

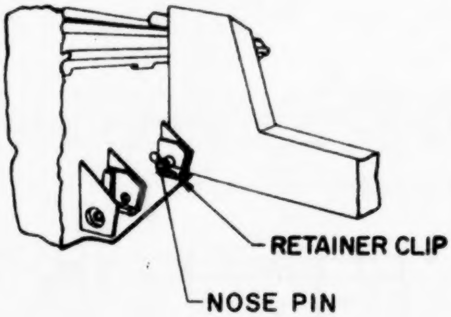
(26) Connect the rear of the light launching nose to the BSB.

(a) Center hook of the light nose rear section fits into the ramp ledge of the BSB.



(b) Put a nose pin through the pin jaws and center bracket.

(c) Put a retainer clip through the end of the nose pin.



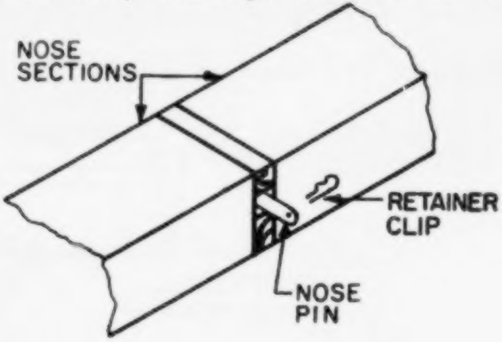
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

(d) Connect the light nose front to the rear section.

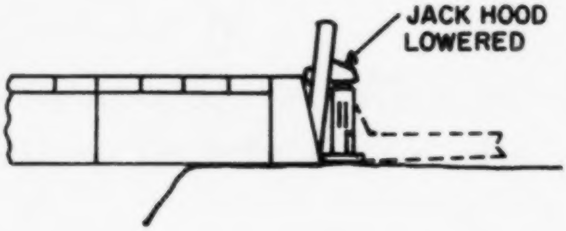
(e) Put a nose pin through the two sections.

(f) Put a retainer clip through the end of the nose pin.

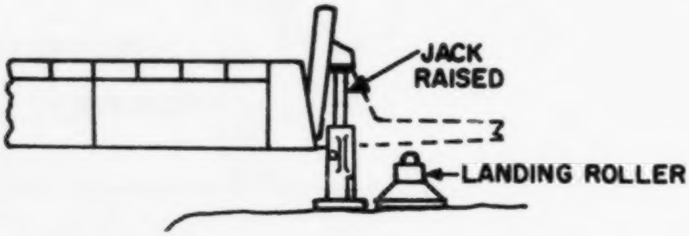


㉗ To raise the far bank end of bridge:

(a) Lower the jack hood to the head of the jack.



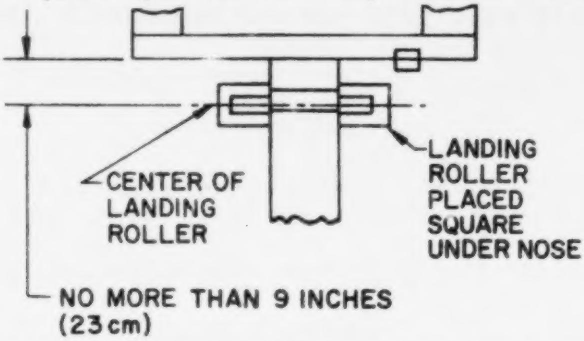
(b) Operate jack to raise bridge high enough to place the landing roller under the rear of the launching nose.



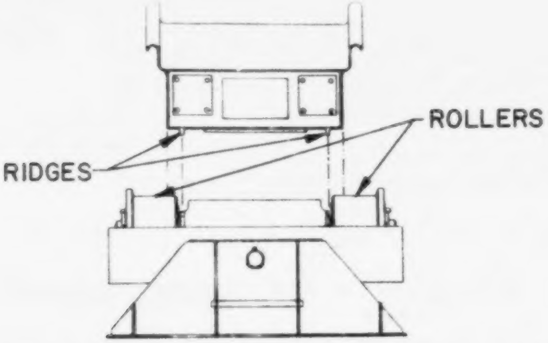
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

(c) Position landing roller under the launching nose. The center of the landing roller should not be farther than 9 in (23 cm) from the edge of the BSB.


CENTER OF LANDING ROLLER
LANDING ROLLER PLACED SQUARE UNDER NOSE
NO MORE THAN 9 INCHES (23cm)

㉘ Operate jack to lower the launching nose onto the landing roller. Ensure that the ridges on the nose fit between the rollers.



㉙ Remove jack, jack post, and packing. Take these parts to the near bank.

For 4, 5, and 6 bay bridges, PROCEED TO STEP 2.a. ㉜ .

㉚ Remove BSB to add counterweight bay(s).

NOTE

Counterweight bay(s) were used to get these bridges across, so they are required to retrieve the bridges.

Bridge Length	No. of Counterweight Bays
7	1
8	2

2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

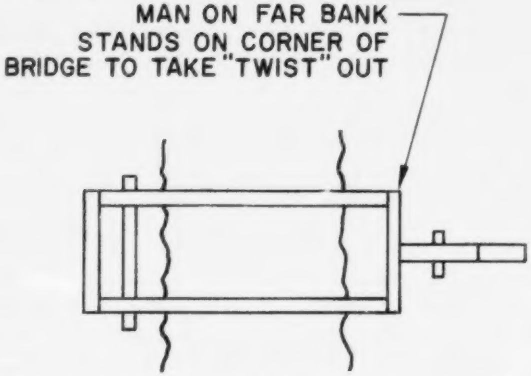
Step 2.a. (Cont).

(a) Remove retainer clip from panel pin in BSB and last top panel.

(b) Remove panel pin connecting BSB to last top panels.

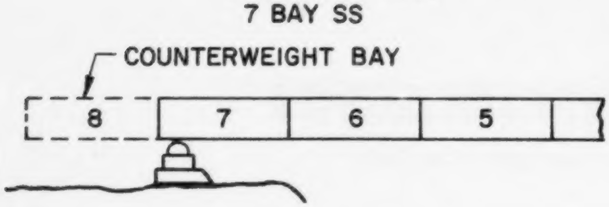
NOTE

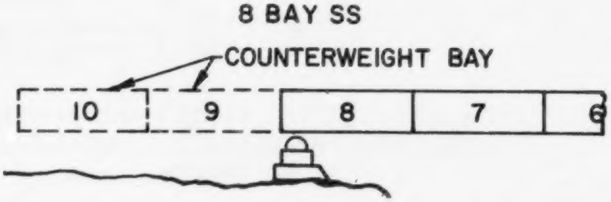
Due to uneven banks, the bridge may have a "twist" in it, which will make removal of panel pins very difficult. To overcome this "twist", have the man on the far bank stand on the corner of the bridge. This may require a second man if "twist" is severe.



(c) Unlock shoot bolts and remove bankseat beam.

(d) Add counterweight bay(s) as required for bridge being disassembled.

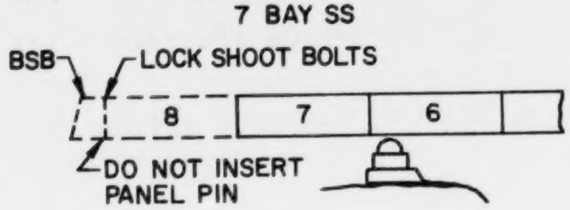


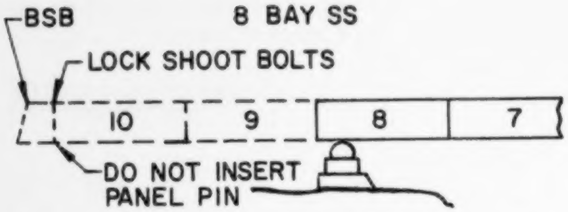


(e) Refit BSB to rear of counterweight bay(s). DO NOT insert panel pin, BSB is held in place by the shoot bolts only.

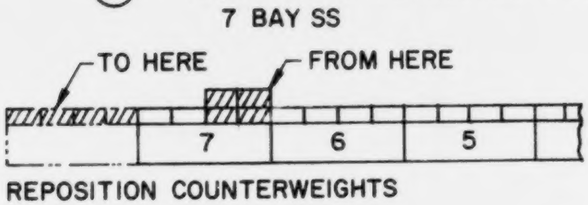
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

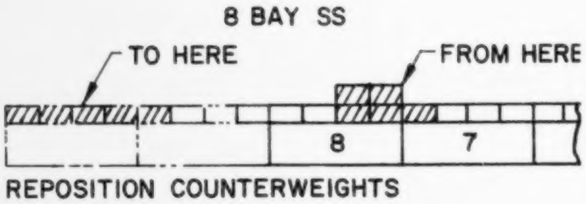
Step 2.a. (Cont).





(31) Reposition counterweight deck units to rear of bridge.



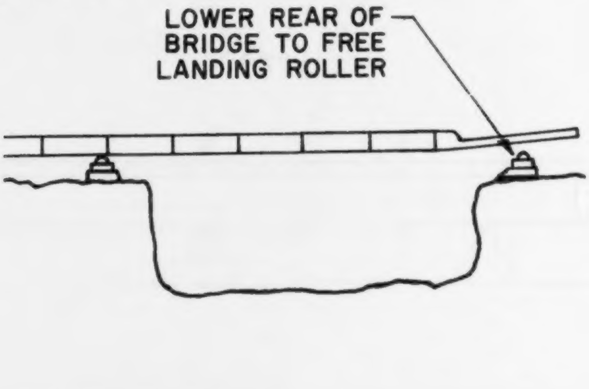


(32) De-launch bridge until CG is over roller beam.

Bridge Length	CG
4	2p7
5	3p3
6	4p2
7	5p2
8	6p2

(a) Unlock rollers, de-launch bridge to panel point given above, stop de-launch and lock rollers.

(b) Lower rear of bridge to lift the launching nose off of the landing roller.



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

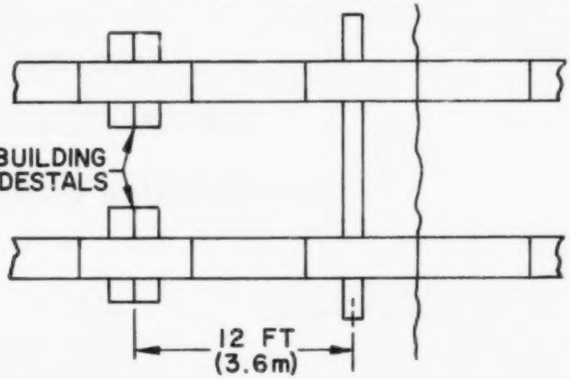
(c) Remove landing roller, lift rear of bridge and return the landing roller to the near bank.

(d) Lower rear of bridge, unlock rollers and boom bridge away from the gap to the panel point given for bridge being disassembled.

Bridge Length	Boom To
4	2p3
5	2p7
6	3p7
7	4p7
8	5p7

(e) Stop boom, lock rollers.

(f) Raise bridge to position building pedestals under girders 12 ft (3.6 m) from center of roller beam.

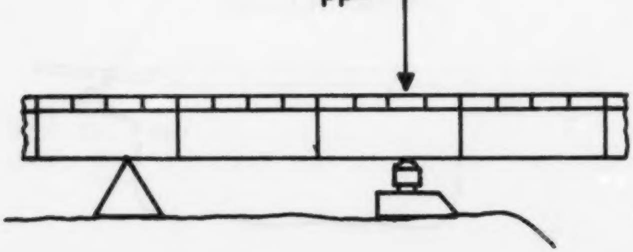


For 4, 5, and 6 bay bridges, PROCEED TO STEP 2.a. (35).

(33) Remove counterweight deck units from bridge.

(34) Unlock rollers and boom bridge to panel point given below.

Bridge Length	Boom To
7	4p3
8	5p3

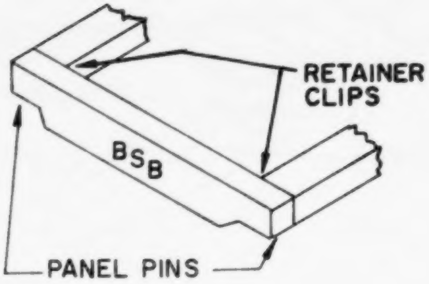


2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

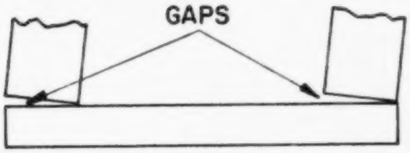
㉟ Remove BSB.

(a) Remove retainer clip and panel pin from BSB and last top panel (for 4, 5, and 6 bay bridges only).

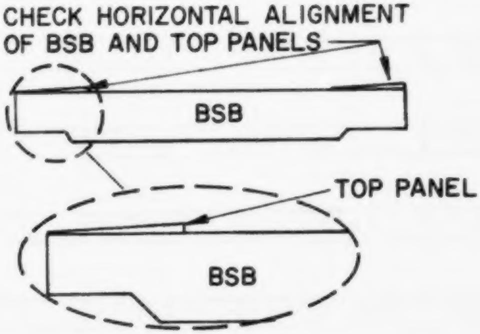


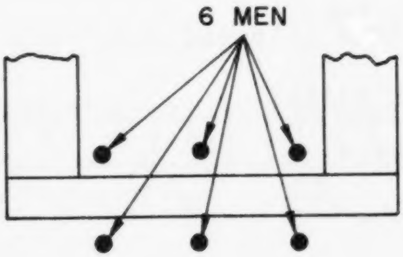
NOTE

Removal of the panel pins can be made easier by checking the level and squareness of the BSB with the top panels. Check for gaps between butting surfaces of top panel and BSB. Use 6 men, 3 men lifting on the inside, and 3 men on the outside to lift and twist the guide slots into the compression bushings.



NO GOOD-REMOVAL OF PIN OR UNLOCKING OF SHOOT BOLTS WILL BE DIFFICULT.



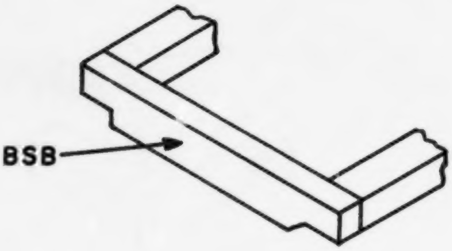


2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

(b) Unlock shoot bolts.

(c) Remove BSB.



(36) Unlock rollers and boom bridge to panel point given below.

Bridge Length	Boom To
4	1p7
5	2p3
6	2p7
7	3p7
8	4p7

For 4 bay bridge, PROCEED TO STEP 2.a. (49).

For 5 bay bridge, PROCEED TO STEP 2.a. (47).

For 6 bay bridge, PROCEED TO STEP 2.a. (45).

For 7 bay bridge, PROCEED TO STEP 2.a. (41).

(37) Remove bay 10 top panel.

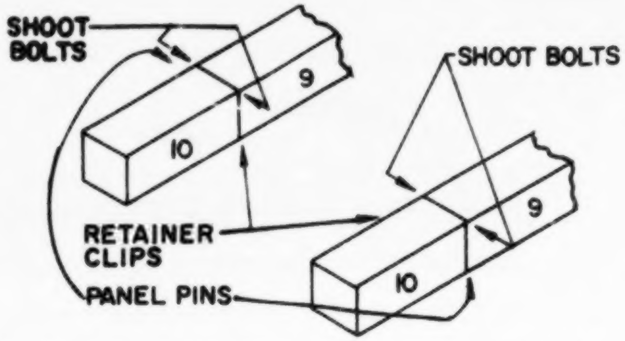
(a) Remove retainer clip and panel pin.

(b) Unlock shoot bolts.

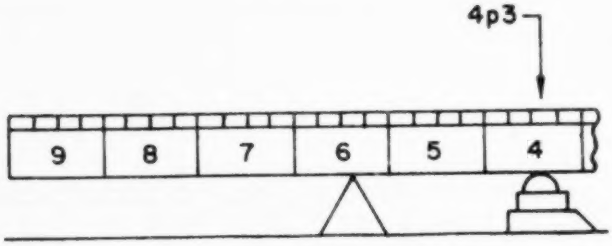
(c) Remove top panel.

2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

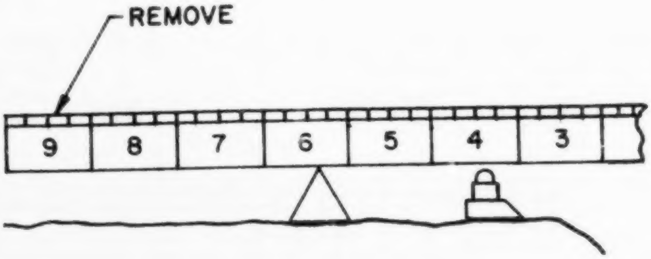
Step 2.a. (Cont).



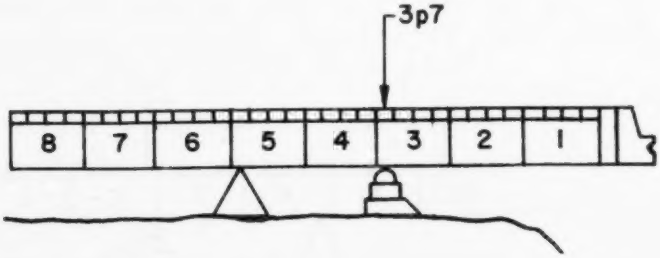
(38) Unlock rollers and boom bridge to panel point 4p3.



(39) Remove bay 9 top panel.



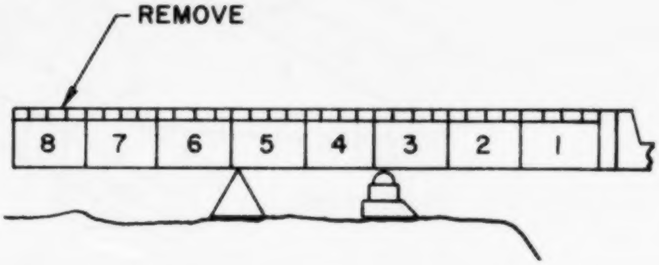
(40) Unlock rollers and boom bridge to panel point 3p7. Stop boom, lock rollers.



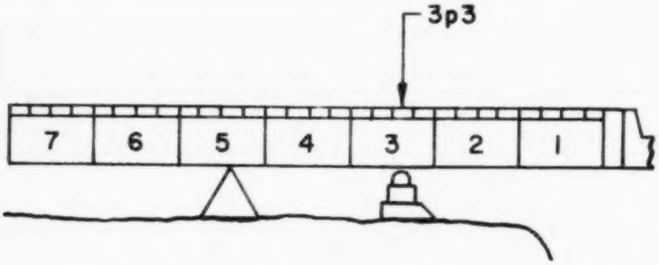
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

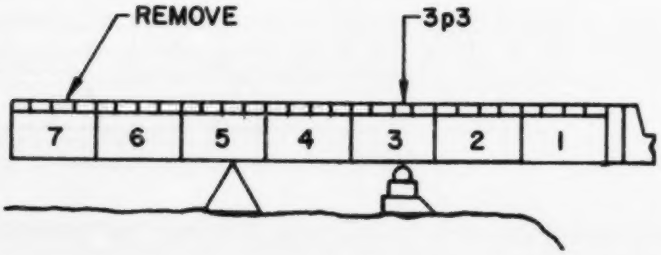
(41) Remove bay 8 top panel.



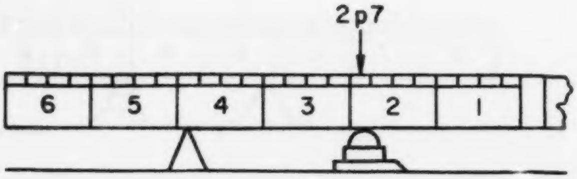
(42) Unlock rollers and boom bridge to panel point 3p3. Stop boom, lock rollers.



(43) Remove bay 7 top panel.



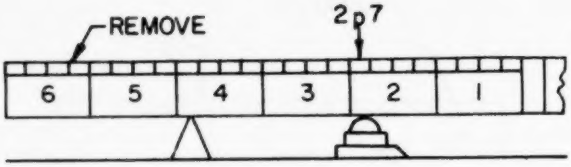
(44) Unlock rollers and boom bridge to panel point 2p7. Stop boom, lock rollers.



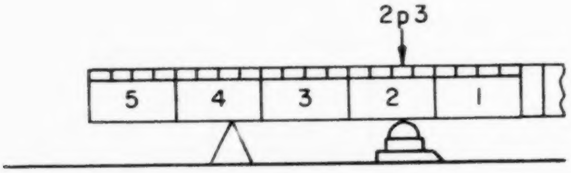
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

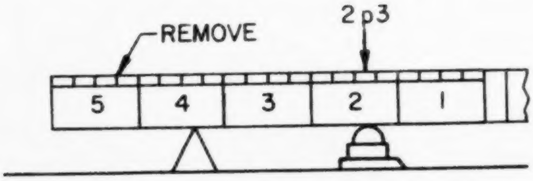
㊺ Remove bay 6 top panel.



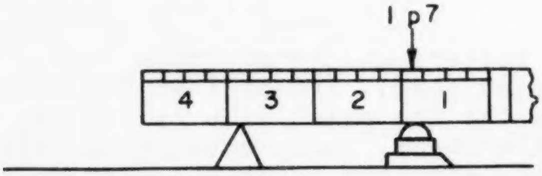
㊻ Unlock rollers and boom bridge to panel point 2p3. Stop boom, lock rollers.



㊼ Remove bay 5 top panel.



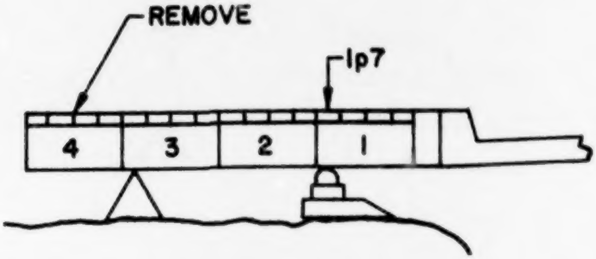
㊽ Unlock rollers and boom bridge to panel point 1p7. Stop boom, lock rollers.



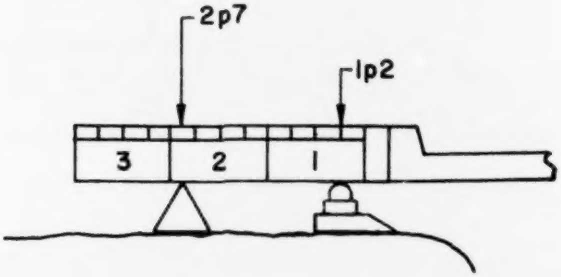
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

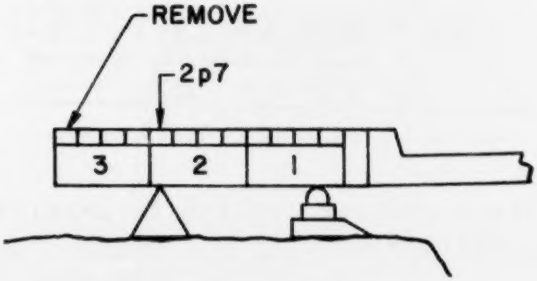
(49) Remove bay 4 top panel.



(50) Unlock rollers and boom bridge to panel point lp2. Stop boom, lock rollers. Position building pedestals under panel point 2p7.



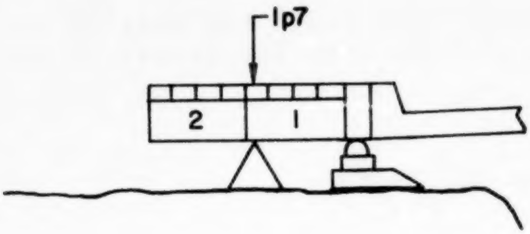
(51) Remove bay 3 top panel.

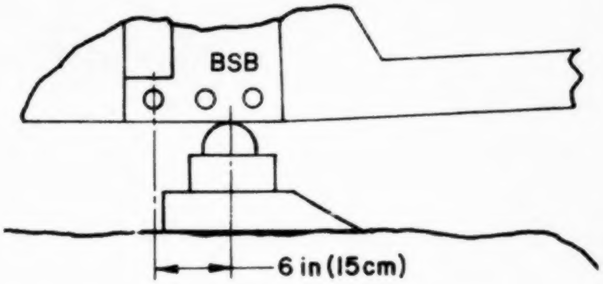


(52) Unlock rollers and boom bridge to the bankseat beam over the roller beam. Ensure that the panel pin connecting the BSB and the top panel is 6 in (15 cm) from the center of the roller beam. Stop boom, lock rollers. Position building pedestals under panel point 1p7.

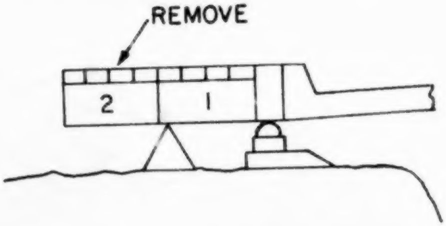
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).



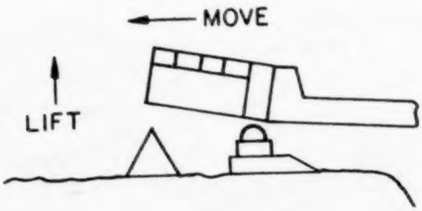


(53) Remove bay 2 top panels.



(54) To disassemble end of bridge:

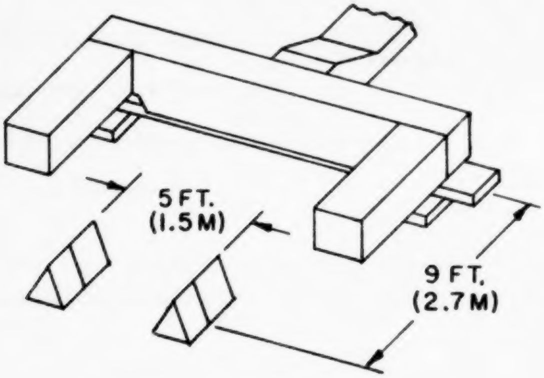
(a) Unlock rollers, lift bay 1 clear of building pedestals and carry entire end of bridge away from the gap.



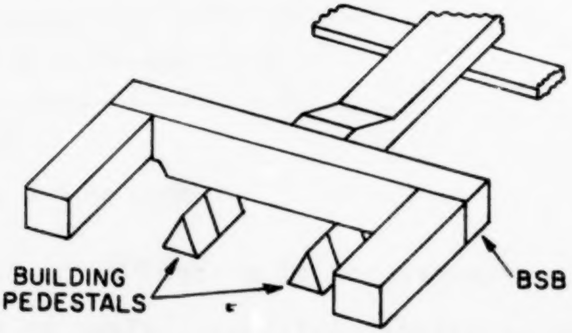
2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

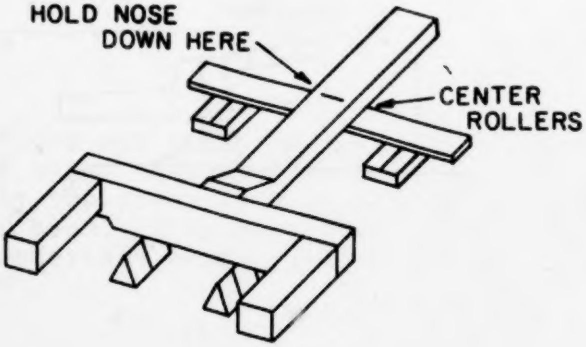
(b) Position building pedestals with their top about 5 ft (1.5 m) at a point 9 ft (2.7 m) from the center of the roller beam.



(c) Stop movement of bridge when the BSB is over the building pedestals. Set BSB on pedestals, DO NOT let top panels down.



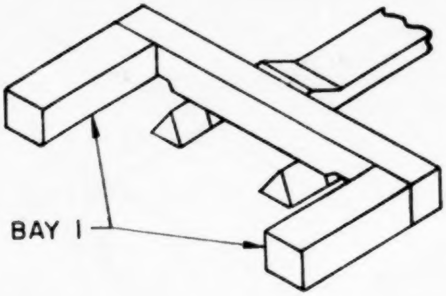
(d) NCOIC of work party will hold launching nose down on center rollers of roller beam while bay 1 top panels are removed.



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

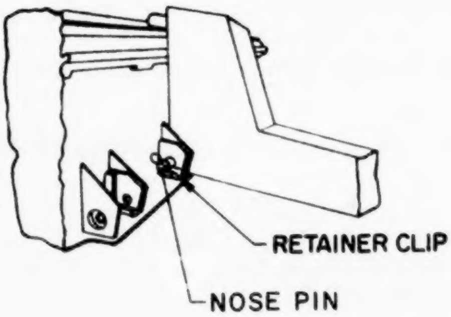
Step 2.a. (Cont).

(55) Remove bay 1 top panels.

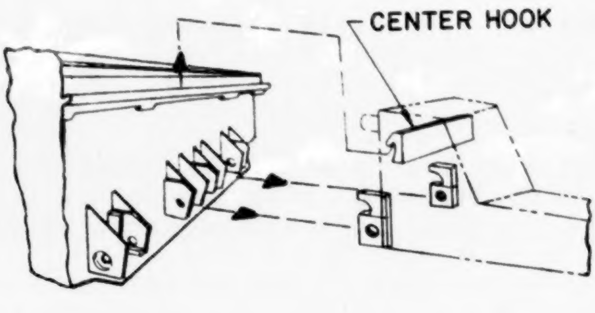


(56) Remove launching nose by:

(a) Removing retainer clip and nose pin from the rear section of light nose and the BSB.



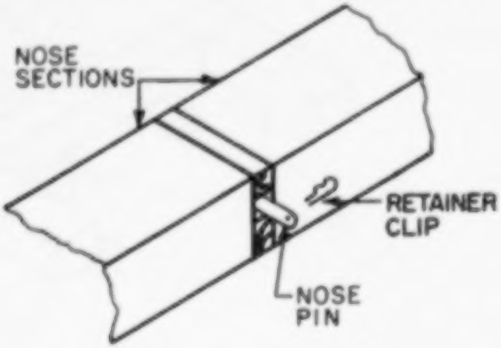
(b) Lift rear of launching nose to disengage center hook from BSB. Place rear of launching nose on top of the BSB and slide nose to the rear of site for disassembly.



2-18. DISASSEMBLY - SINGLE STORY - 4 thru 8 BAY (Cont).

Step 2.a. (Cont).

(c) Remove retainer clip and nose pin connecting front and rear nose sections. Disconnect nose sections from each other.

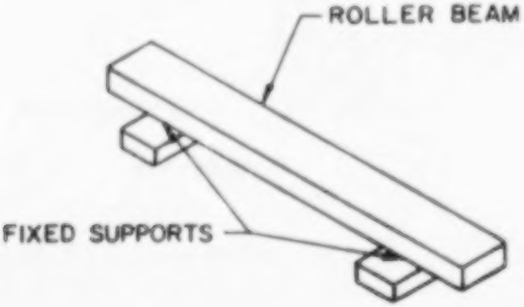


(57) Remove BSB from building pedestals.

(58) Disassemble roller beam.

(a) Remove roller beam from the fixed supports.

(b) Remove the fixed support from the baseplates.



(59) Remove all components from the site.

2-19. ASSEMBLY - SINGLE STORY - GENERAL.

This section will describe step by step procedures for constructing all lengths of single story bridges. The procedures will start with the assembly of the roller beam. Marking of site, pallet off-loading and placement have been covered in earlier sections of this chapter.

Since the assembly procedures are different for each length of bridge, the user will be instructed to proceed to certain steps as required for the bridge that is being built.

EXAMPLE: Constructing a 12 Bay Single Story MGB.

When constructing a 12 bay Steps 2.a.(1) through 2.a.(24) are performed. At the end of Step 2.a.(24) the user is instructed to proceed to Step 2.a.(30) for construction of the 12 bay bridge.

DO EXACTLY THAT. DO NOT PERFORM Step 2.a.(25) through Step 2.a.(29), these steps are used when constructing another length of bridge.

At the end of Step 2.a.(30) there are no instructions to proceed to another step. The user should continue by going to the next step, which in this case is 2.a.(31). The rule to follow is: continue performing the steps in the order they are given, unless instructed to proceed to another step.

Following that rule, the user performs steps 2.a.(30) through 2.a.(32).

If the user is in doubt as to the steps to perform, the listing that follows is provided as a quick reference to check the steps used to construct any of the single story bridges.

To use the listing, the user reads down the column of the bridge being constructed, and performs the steps in the order listed.

Using the example of the 12 bay bridge, the user should perform steps:

1.a.(1) through (5)
2.a.(1) through (32)
(37) through (49)
(53) through (85)

Once the user becomes familiar with the step by step procedures of construction, it will be possible to construct any single story bridge by using the Building and Booming Table.

This table provides the necessary instructions to construct, boom and launch all bridges.

2-19. ASSEMBLY - SINGLE STORY - GENERAL (Cont).

Table 2-25. Required Steps Per Bridge Length.

9	10	11	12
1.a(1) through (5)	1.a(1) through (5)	1.a(1) through (5)	1.a(1) through (5)
2.a(1) through (24)	2.a(1) through (24)	2.a(1) through (27)	2.a(1) through (32)
(30)	(30)	(30)	(37) through (49)
(37) through (52)	(33) through (49)	(37) through (49)	(53) through (85)
(56) through (85)	(52) and (53)	(51) through (54)	
	(56) through (85)	(56) through (85)	

Table 2 -26. Building and Boom Table - 9 thru 12 Bay Single Story

Bridge ft. Length m	56 17.1	62 18.9	68 20.7	74 22.6
No. of Bays	9	10	11	12
Nose Construction	5N1	5N1	6N1	6N1
Build And Boom	Notes a, b, c, d, e, and f	Notes a, b, c, d, e, and f	Notes a, b, c, d, e, and f	Notes a, b, c, d, e, and f
ADD	4 and 1N1	4 and 1N1	4 and 1N1	4 and 1N1
ADD	5 and 2N1	5 and 2N1	5 and 2N1	5 and 2N1
ADD	6	6	6	6
ADD	3N1, 4N1, and 5N1	3N1, 4N1, and 5N1	3N1, 4N1, and 5N1	3N1, 4N1, and 5N1
Boom To and ADD	1p5 Set Up LRP*	1p4 7	1p4 7 and 6N1	1p4 7 and 6N1
Boom To and ADD or REMOVE	6p7 Notes g and h	2p0 8	1p5 Set up LRP*	1p5 8
Boom To and ADD or REMOVE	7,8,9, and BSB	2p4 Set up LRP*	7p7 Notes g and h	2p1 9
Boom To and ADD or REMOVE	9p7	8p7 Notes g and h	8, 9, 10, 11,and BSB	2p4 Set up LRP*
Boom To and ADD or REMOVE		9,10 and BSB	11p7	9p7 Notes g and h
Boom To and ADD or REMOVE		10p7		10, 11, 12, and BSB
Boom To				12p7
Complete By:	Note i	Note i	Note i	Note i

NOTES:

a. Build Bays 1,2, and 3.
b. Boom to 1p2.
c. Put BP under 1p7 as Bay 1 is added.
d. Put BP under 2p4 as Bay 2 is added.
e. Put BP under 3p7 as Bay 3 is added.
f. LLN added.
g. Remove LLN.
h. Remove LNH sections as they pass LRP.
i. Put bridge on ground by lowering LRP first, then use jacks to lower near bank end of bridge.
* Positioning of LRP under launching nose.

Abbreviations:

LNH = Launching Nose Heavy
LRP = Landing Roller Pedestal
5N1 and 6N1 = Types of single story nose construction. The first number indicates the number of heavy nose sections used. N1 means nose single story.

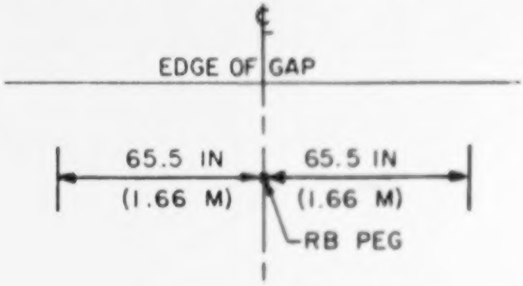
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site).

For Single Story - 9 through 12 Bay Bridges, PROCEED TO STEP 1.

Step 1. Placement of Roller Beam. Steps needed to set up and and align the roller beam are as follows:

a. Setting up roller beam.

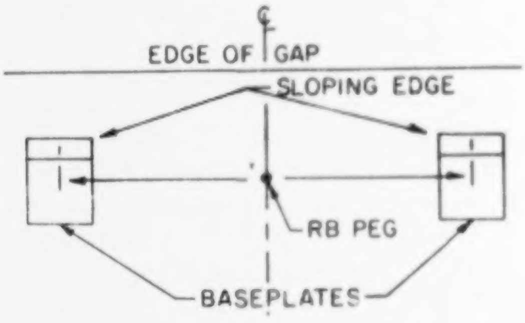
① Measure 65.5 in (1.66 m) on each side of RB peg.



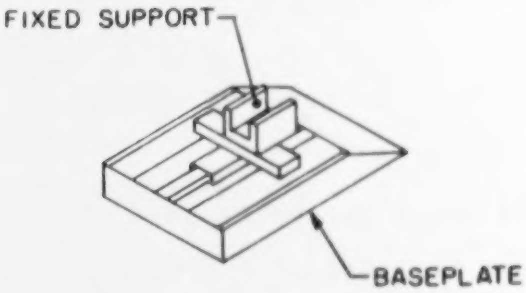
② Put fixed support baseplates in place.

(a) Ensure that the sloping edge of the baseplate faces gap.

(b) Baseplates are centered over marks.



③ Place roller beam fixed support on baseplate.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

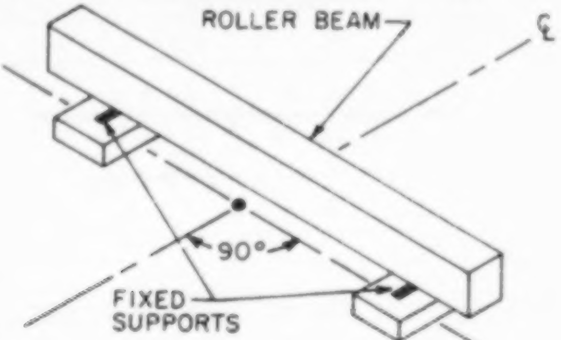
Step 1.a, (Cont).

④ Place roller beam on roller beam fixed support.

(a) Single story supports fit into pivoting head of fixed supports.

(b) Ensure that the roller beam is centered over the centerline and RB peg.

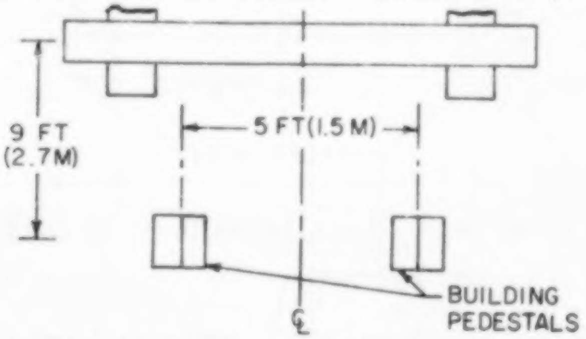
(c) Ensure that the roller beam is positioned at a right angle (90°) to the centerline. Lock rollers.



⑤ Place building pedestals in position 5 ft (1.5 m) behind roller beam.

(a) Building pedestals are placed with the long side parallel to the roller beam.

(b) Ensure that the distance between the top of pedestals and roller beam is no more than 5 ft (1.5 m).



Step 2. Assembly - Single Story - 9 through 12 Bay.

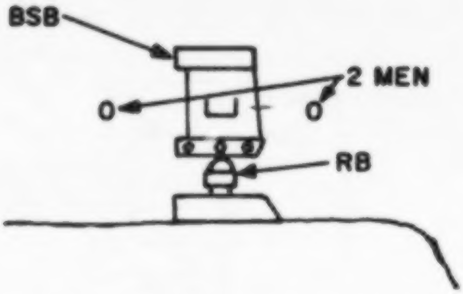
a. Assembly procedures.

① Place BSB on roller beam.

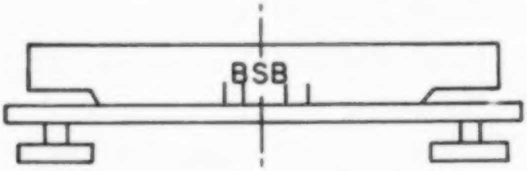
(a) BSB must be steadied and held on top of roller beam by at least 2 men.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).



(b) Ensure that BSB is centered over roller beam.



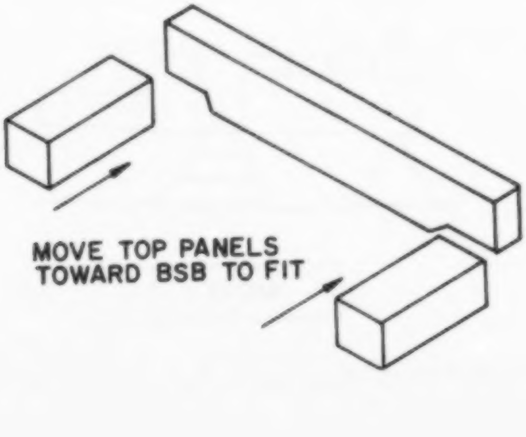
CENTER BSB OVER ROLLER BEAM

NOTE

For ease of construction, the next step must be performed simultaneously by both panel crews.

② Fit first top panel to bankseat beam.

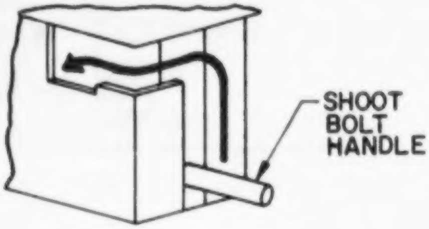
(a) Engage dowels and sockets of both the top panel and the bankseat beam.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

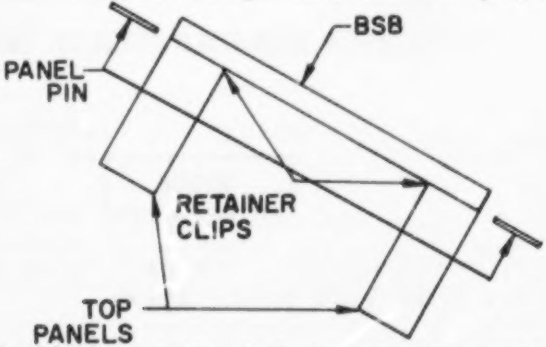
(b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.



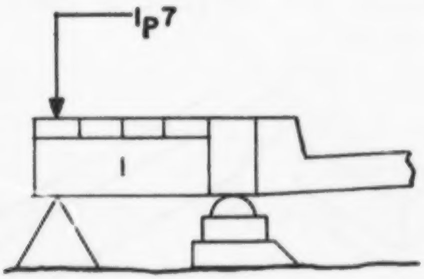
(c) Let rear of panel down slowly. Guide bushings and slots will line up pin jaws.

(d) Insert panel pin until shoulder butts against jaw of panel.

(e) Put retainer clip through the end of panel pin.



(f) Position building pedestal under the rear of bay 1 (under 1p7).



NOTE

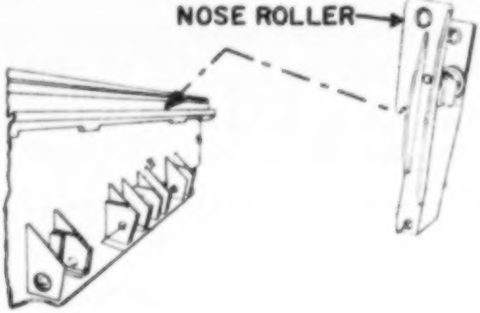
The first bay has now been built.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

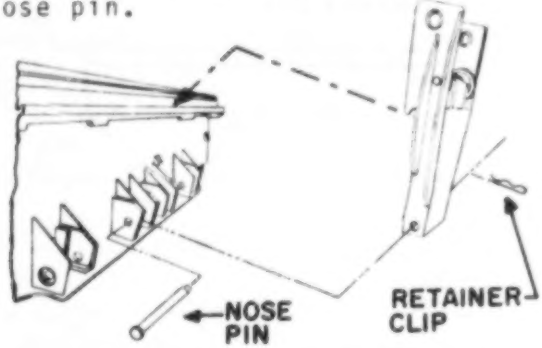
Step 2.a. (Cont).

③ Pin nose roller to bankseat beam.

(a) Hook nose roller on bankseat beam rail.



(b) Push launching nose pin through bracket and bottom of nose roller. Nose roller is in place. Put retainer clip through nose pin.



④ Position the extended jack in the landing roller pedestal and place the closed landing roller pedestal and the landing roller in front of the roller beam.

NOTE

The landing roller pedestal is used when constructing 9 through 12 bay single story bridges.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

⑤ Pin top panels of bay 2 to the top panels of bay 1.

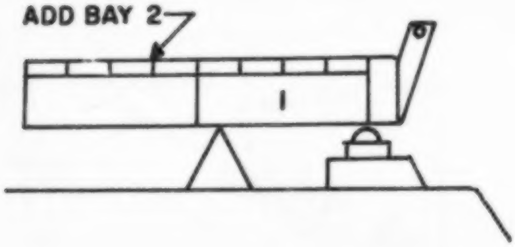
(a) Engage dowels and sockets of both top panels.

(b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.

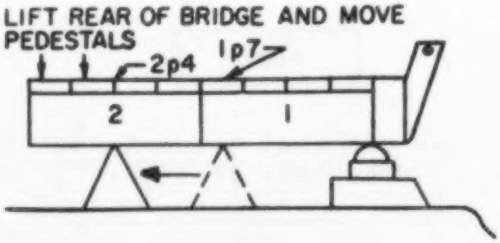
(c) Let rear of panel down. Guide bushings and slots will line up pin jaws.

(d) Insert panel pin until shoulder butts against jaws of panel.

(e) Put retainer clip through the end of panel pin.



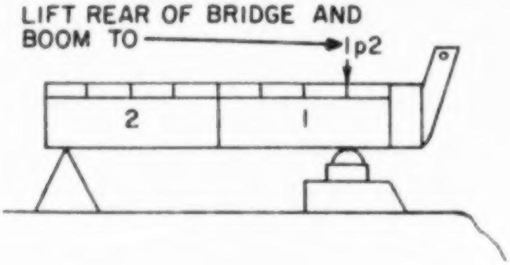
⑥ Lift girders and move pedestals under middle of bay 2 (panel point 2p4). Bay 2 has now been built.



⑦ Unlock roller beam rollers. Lift girders and boom bridge forward until panel point 1p2 is over roller beam rollers, lock rollers.

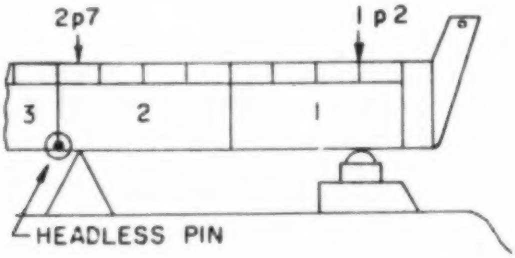
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

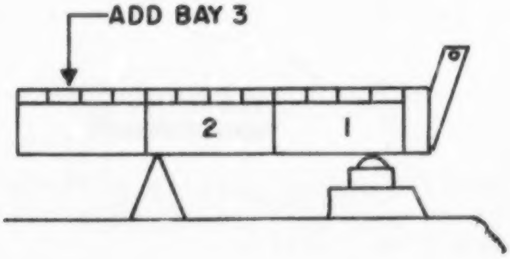


NOTE

Use headless panel pin at the junction of bays 2 and 3. This pin is required at this point for connection of the launching nose cross girder post.



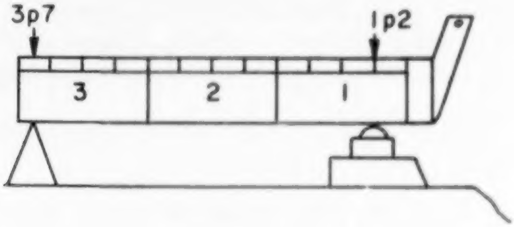
⑧ Pin top panels of bay 3 to the top panels of bay 2.



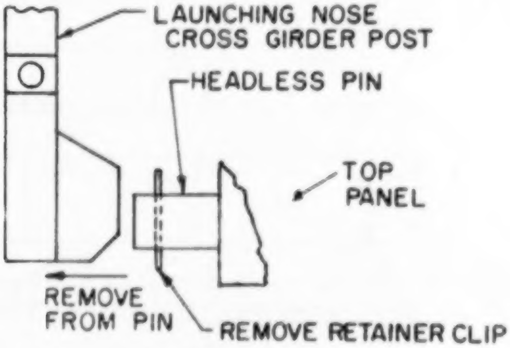
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

⑨ Lift girders and move pedestals under the end of Bay 3 (panel point 3p7). The building pedestals are now in their final position, no further movement of the pedestals is required.



⑩ Fit nose cross girder post to headless pin at junction of bays 2 and 3.



NOTE

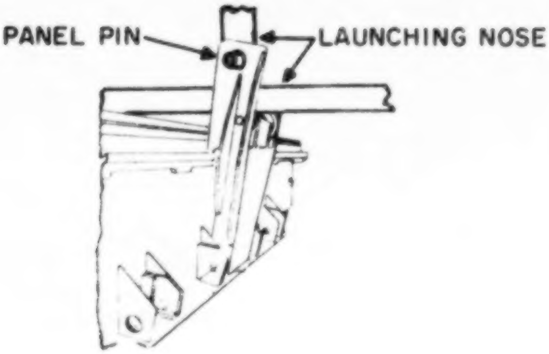
Use headless panel pin to connect nose cross girder posts to panels. Place retainer clips through both ends of the pin (inside retainer clip is placed on the inside of nose cross girder post to keep nose cross girder post from slipping off headless pin, and to keep pin from working out of the hole).

WARNING

Before work party removes captive pins to change heights, a panel pin must be placed through nose roller and launching nose to prevent nose from rolling.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

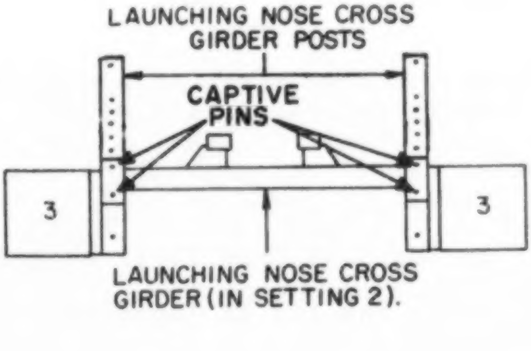
Step 2.a. (Cont).



NOTE

It is easier to construct the launching nose in middle position. Place nose cross girder in desired setting after the complete nose is constructed (prevents very high lifts or pushing the nose "uphill" during construction). After the nose is fully constructed and then pulled back to the balance point, the work party removes and replaces captive pins in the next hole. This continues until the nose is at the desired setting.

⑪ Pin nose cross girder to post at correct height and put retainer clips through the end of captive pins.


LAUNCHING NOSE CROSS GIRDER POSTS
CAPTIVE PINS
3
3
LAUNCHING NOSE CROSS GIRDER (IN SETTING 2).

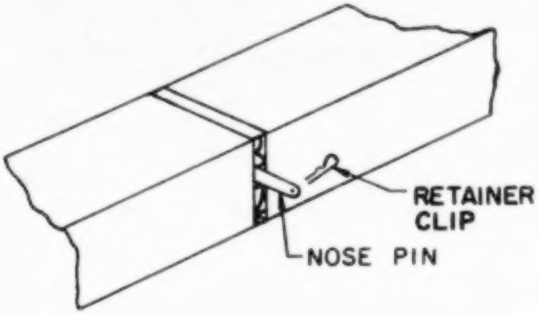
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

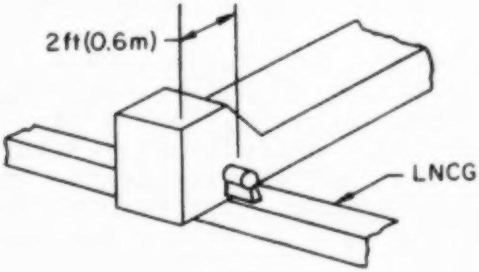
⑫ Pin front and rear sections of light nose together.

(a) Use nosepin to join the two sections together.

(b) Put retainer clip through the end of nosepin.



⑬ Place front end of light nose section on nose roller and rear end on nose cross girder. Rear of nose section should extend about 2 ft (0.61 m) behind cross girder.



NOTE

A 5,000 lb cargo tie-down strap is placed around the pedestal and nose to keep it secured to the nose.

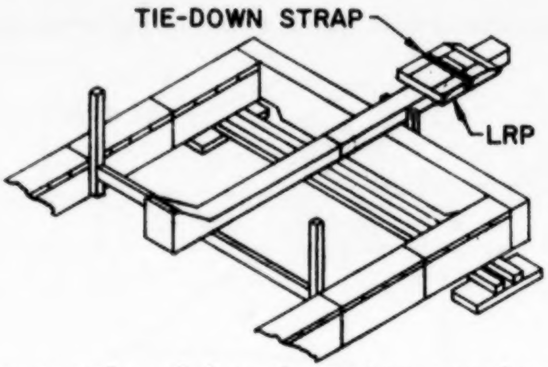
⑭ Put landing roller pedestal (LRP) and landing roller on front of nose.

(a) Put one 15 ton jack (ram fully extended) in LRP.

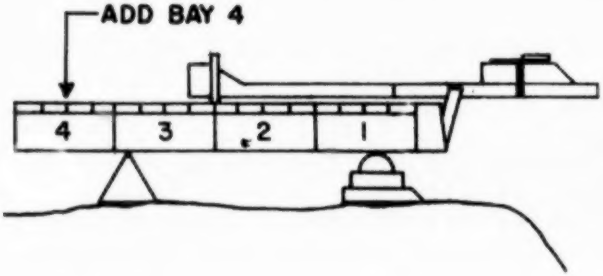
(b) Secure LRP to the tip of light nose with the cargo tie-down strap.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).



⑮ Pin top panels of bay 4 to top panels of bay 3.

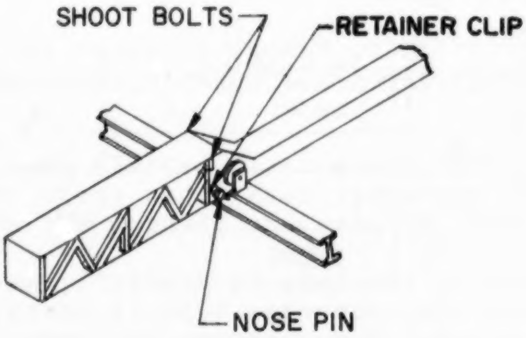


⑯ Pin first heavy nose unit to end of light nose units.

(a) Fit sockets of heavy nose unit onto dowels of nose unit on nose cross girder.

(b) Lift and push shoot bolts through dowels and turn handles to locked position.

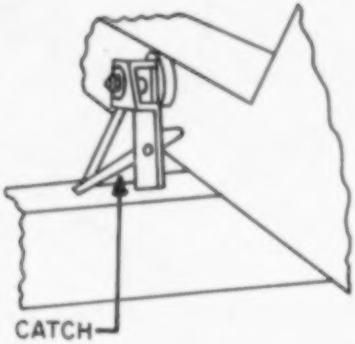
(c) Push nose pin through jaws of nose units.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

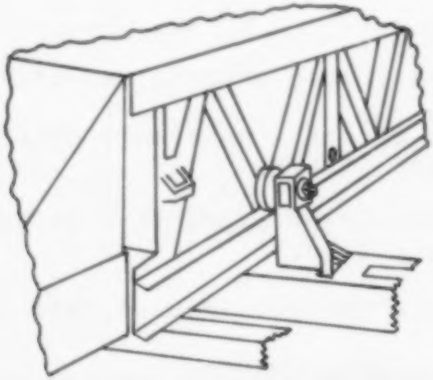
⑰ Raise gravity catch handle on nose cross girder.



⑱ Push nose forward 5 ft (1.5 m).

(a) Align first diagonal (V in heavy nose unit) with gravity catch.

(b) Place carrying bar through nose unit either in front of or behind gravity catch (depends on slope of nose).



⑲ Lift gravity catch, remove carrying bar and push nose forward until anchorage tube in first nose section is next to gravity catch.

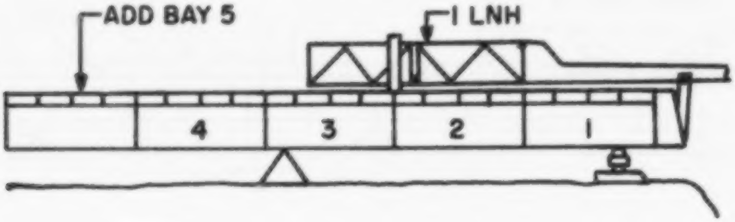
(a) If the tip of the nose is uphill, move the nose forward until the anchorage tube is in front of the gravity catch. Put carrying bar through the anchorage tube.

(b) If the tip of the nose is downhill, move the nose to the rear until the anchorage tube is to the rear of the gravity catch. Put carrying bar through the anchorage tube.

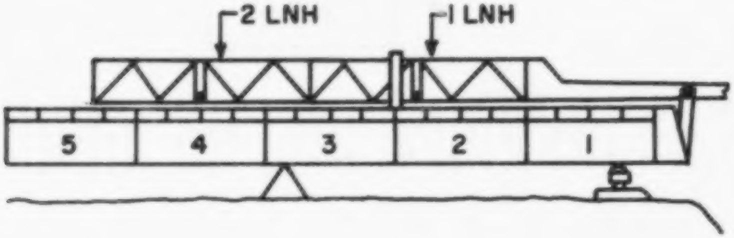
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

⑳ Pin top panels of bay 5 to the top panels of bay 4.



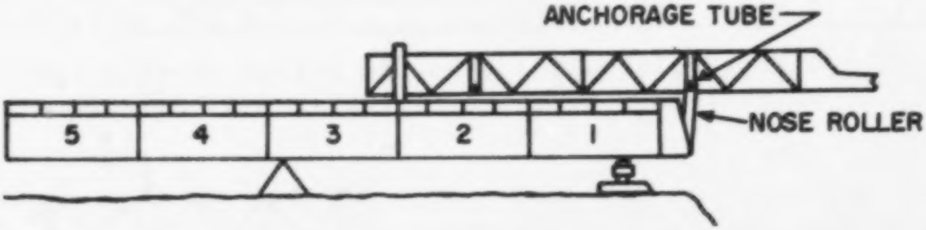
㉑ Pin second heavy nose section to first heavy nose section.



㉒ Lift gravity catch, remove carrying bar, and push the nose forward until the anchorage tube is aligned with the anchorage holes in the nose roller.

(a) Insert panel pin through anchorage holes and tube.

(b) Put retainer clip through the end of panel pin.



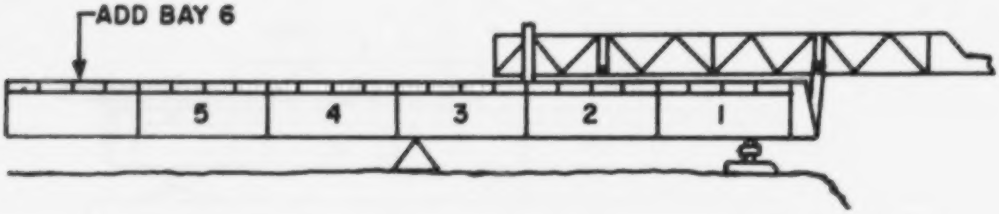
NOTE

Do not remove this pin until another nose section is attached and the nose crew has "hands on" the nose to prevent it from rolling.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

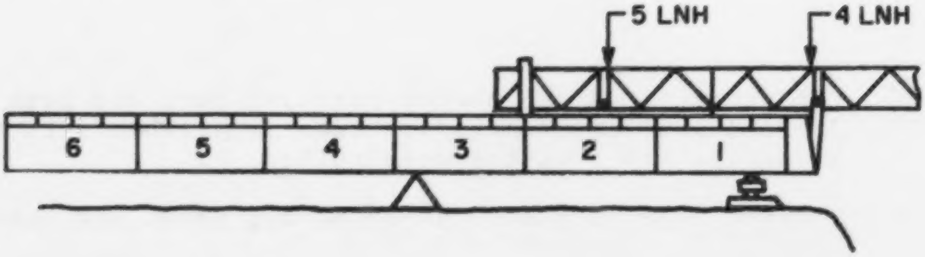
(23) Pin top panels of bay 6 to the top panels of bay 5.



(24) Pin third, fourth, and fifth nose sections in place.

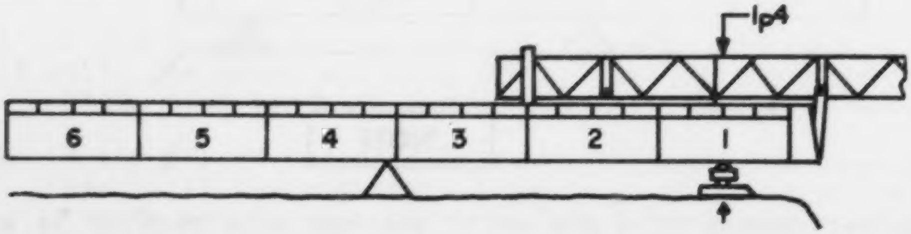
NOTE

Remove the pin in the anchorage tube and move nose forward the length of 1 nose unit [10 ft (3.7 m)]. Put pin back through anchorage tube and nose roller as each nose section is added.



For 9 and 10 bay bridges, PROCEED TO STEP 2.a (30).

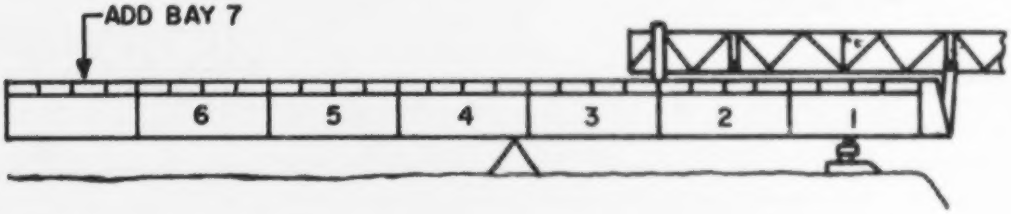
(25) Unlock rollers and boom the bridge forward until panel point lp4 is over the rollers, lock rollers.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

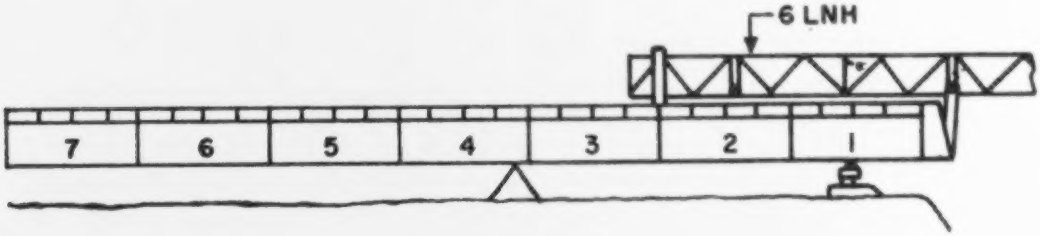
㉖ Pin top panels of bay 7 to the top panels of bay 6.



㉗ Pin sixth nose section in place.

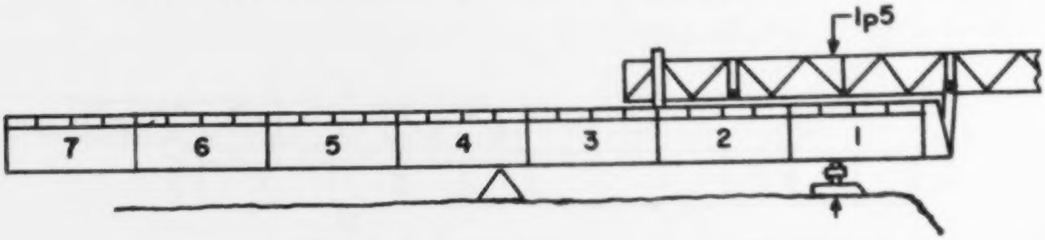
NOTE

Remove the pin in the anchorage tube, move nose forward the length of 1 nose section [10 ft (3.7 m) m)]. Put pin back through anchorage tube and nose roller.



For 11 bay bridge, PROCEED TO STEP 2.a. ㉚.

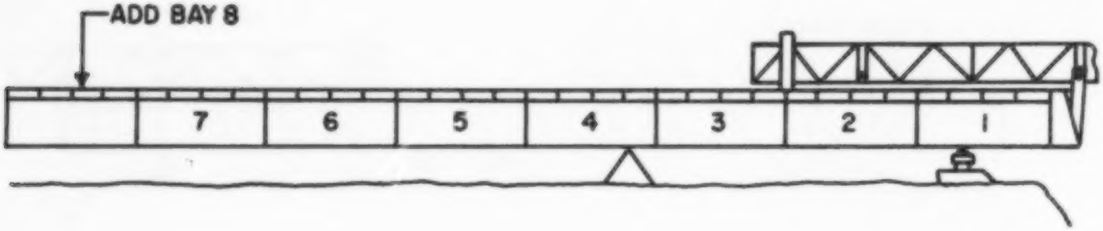
㉘ Unlock rollers and boom the bridge forward until panel point 1p5 is over the rollers, lock rollers.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

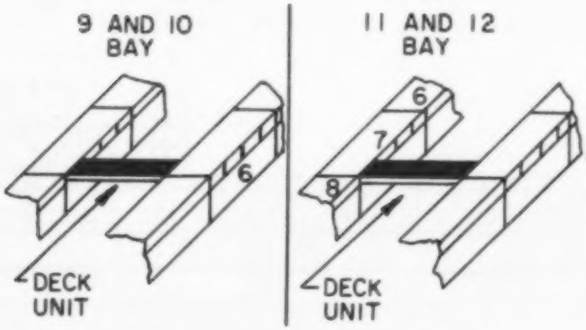
Step 2.a. (Cont).

㉙ Pin top panels of bay 8 to top panels of bay 7.



㉚ Place 1 deck unit in bay 3 close to the nose and another at the rear of bay given below for bridge being constructed.

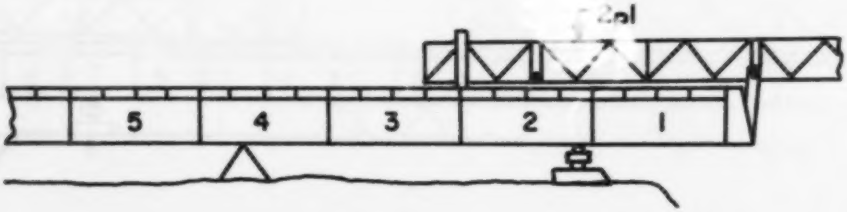
Bridge Length	Put deck in bay
9 and 10	6
11 and 12	7



For 10 bay bridge, PROCEED TO STEP 2.a. ㉝.

For 9 and 11 bay bridge, PROCEED TO STEP 2.a. ㊲.

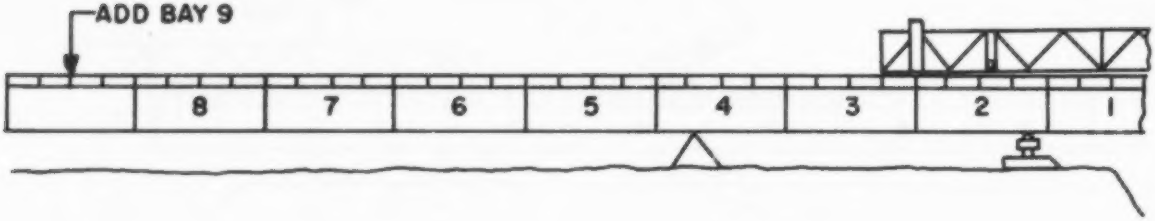
㉛ Unlock rollers and boom the bridge forward until panel point 2pl is over the rollers, lock rollers.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

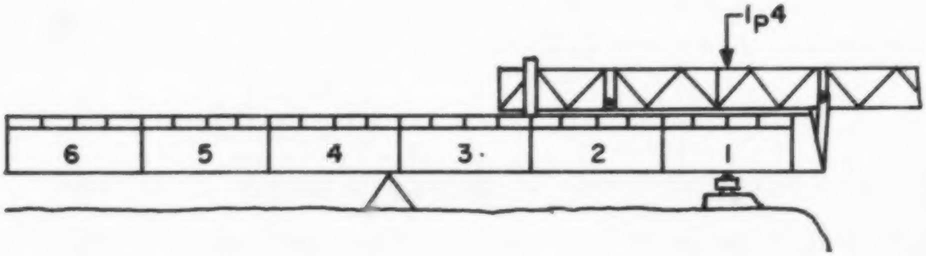
Step 2.a. (Cont).

㉜ Pin top panels of bay 9 to the top panels of bay 8.

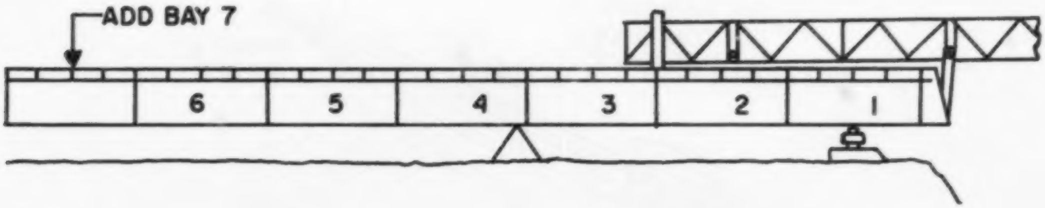


For 12 bay bridge, PROCEED TO STEP 2.a. ㊲.

㉝ Unlock rollers and boom the bridge forward until panel point 1p4 is over the rollers, lock rollers.



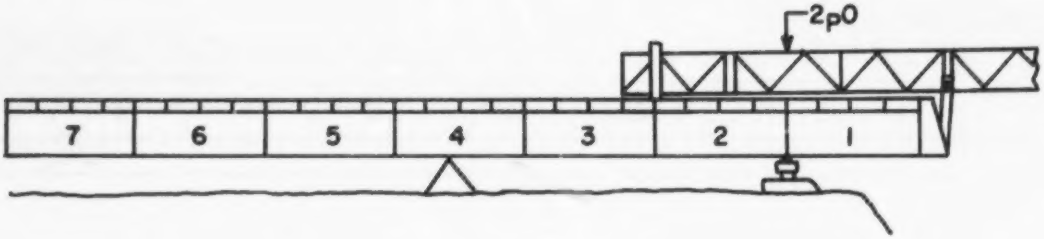
㉞ Pin top panels of bay 7 to the top panels of bay 6.



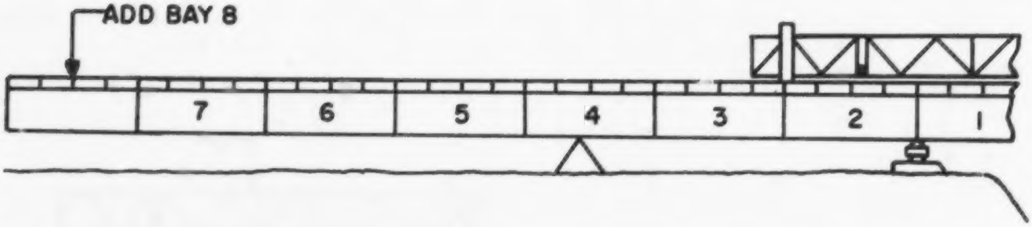
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(35) Unlock rollers and boom the bridge forward until panel point 2p0 is over the rollers, lock rollers.



(36) Pin top panels of bay 8 to the top panels of bay 7.

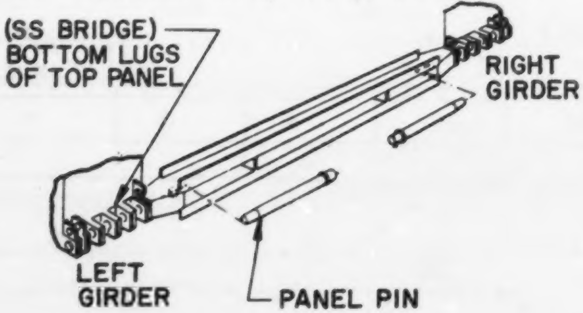


(37) Pin push bar cross girder to last bay of bridge.

(a) Position push bar cross girder between pin jaws of last top panels.

(b) Put panel pins through push bar cross girder and pin jaws of panels. Pins are inserted from the inside of girder out through the pin jaws.

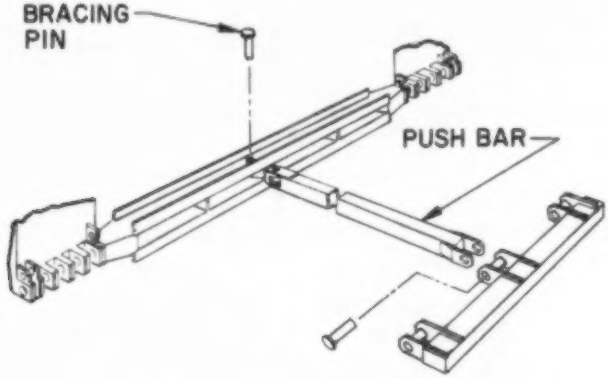
(c) DO NOT put retainer clip in panel pins.



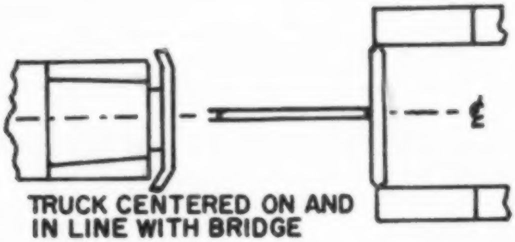
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

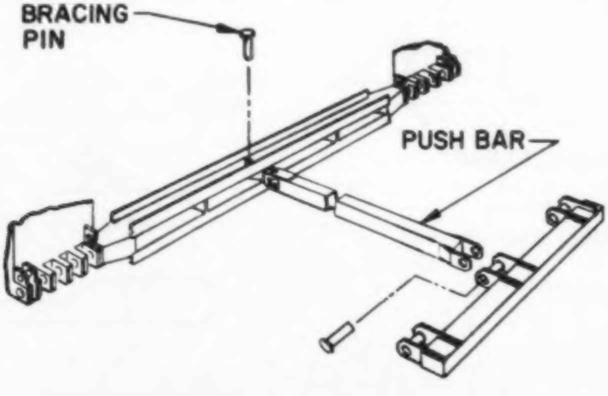
(38) Pin short push bar to push bar cross girder with bracing pin. Secure the bracing pin with a retainer clip.



(39) Move vehicle into position near rear of bridge. Ensure that vehicle is in a straight line with the bridge and centered over the centerline.



(40) Pin the push bar to the adapter with bracing pin and secure the pin with retainer clip.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

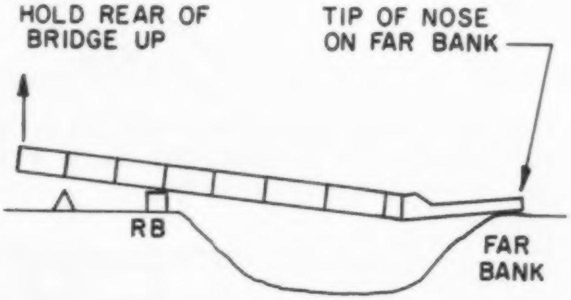
Step 2.a. (Cont).

㊶ Launch bridge to panel point given below for bridge being constructed.

Bridge Length	Launch To
9	1p5 (over RB)
10	2p4 (over RB)
11	1p5 (over RB)
12	2p4 (over RB)

Then stop launch, lock rollers.

㊷ Raise the rear of the bridge by hand until nose nose touches far bank.

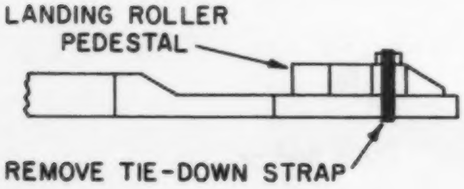


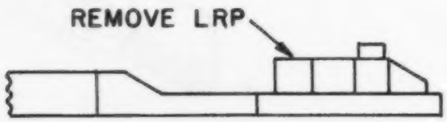
㊸ Six men cross to far bank to set up landing roller pedestal (LRP).

㊹ To set up LRP.

(a) Remove 5,000 lb cargo tie-down strap.

(b) Remove LRP from tip of launching nose. As LRP is removed, the rear of bridge is lowered back onto the building pedestals.

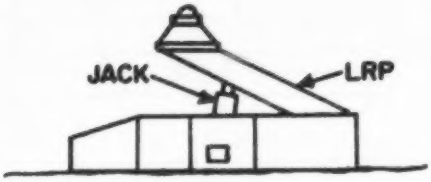




2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

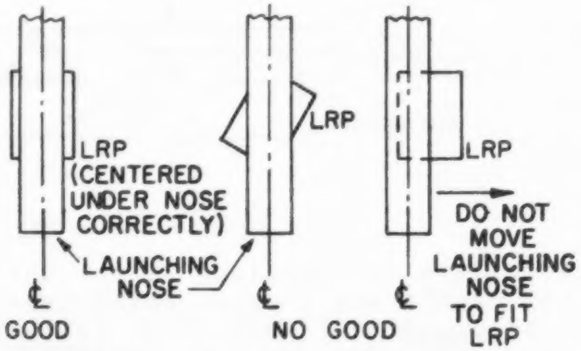
Step 2.a. (Cont).

(c) Place fully extended jack (15 ton) in the base of the LRP. Lower jack hood onto head of jack.

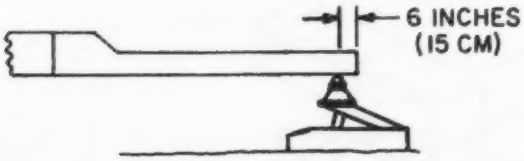


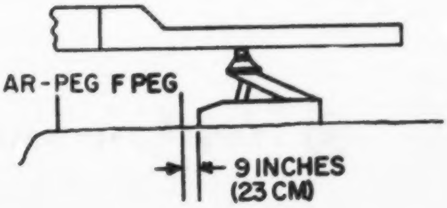
NOTE

The LRP must be positioned and centered under the launching nose. Its base must be parallel to the nose. Do not move nose sideways to fit LRP.


LRP (CENTERED UNDER NOSE CORRECTLY)
LAUNCHING NOSE
℄
GOOD
LRP
℄
NO GOOD
LRP
DO NOT MOVE LAUNCHING NOSE TO FIT LRP
℄

(d) Position the LRP under the launching nose, lifting the nose, if necessary. The LRP is placed so that either the center of the landing roller is 6 in (15 cm) from the tip of nose OR the edge of LRP is 9 in (23 cm) from the F peg.

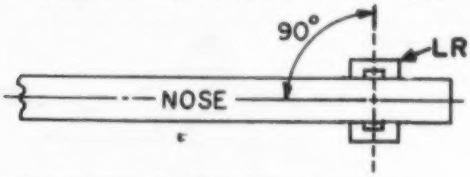


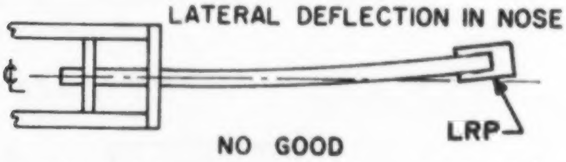


2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

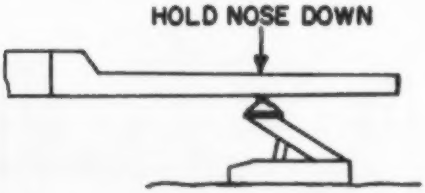
Step 2.a. (Cont).

(e) Check placement of the LRP to ensure that the landing roller is at right angles (90°) to the nose, and that there is no lateral deflection in the launching nose.

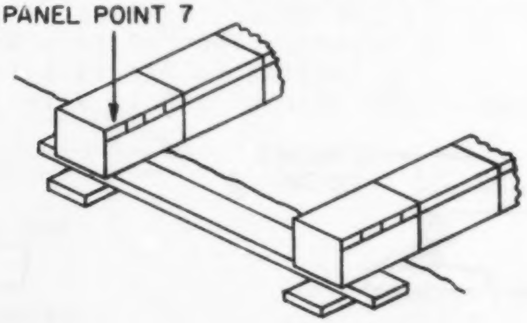




(f) Raise rear of bridge, far bank crew guides launching nose onto roller and will hold nose in place during next step.



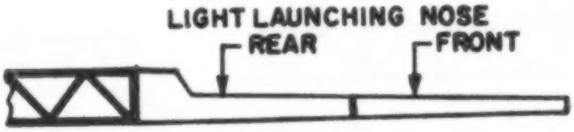
㊺ Unlock rollers and continue launch until the end of the last top panels are 1 panel point from the center of the roller beam. Stop launch, lock rollers.



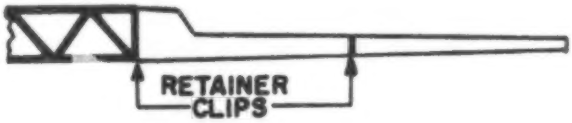
㊻ Remove both sections of light launching nose.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

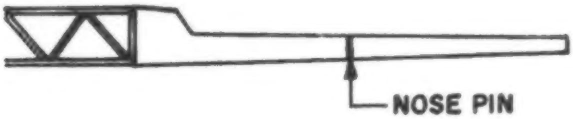
Step 2.a. (Cont).



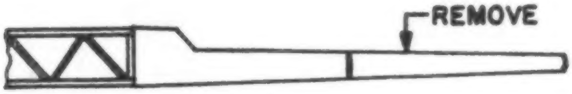
(a) Remove retainer clips from both nose pins in light nose sections.



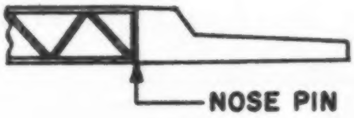
(b) Remove nose pin between the two light nose sections.



(c) Remove light nose front.



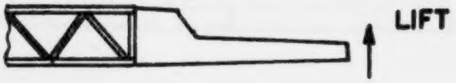
(d) Remove nose pin from rear of light launching nose rear section.



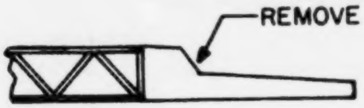
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(e) Light nose rear must be lifted slightly to allow unlocking of the shoot bolts.

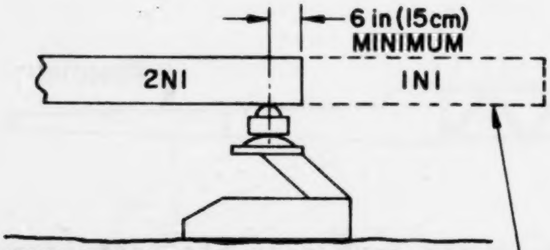


(f) Remove light launching nose rear.



NOTE

Heavy nose sections are removed after they have passed beyond the center of landing roller. It is important to remember that at least 6 inches (15 cm) of a nose section must extend beyond the landing roller at all times.



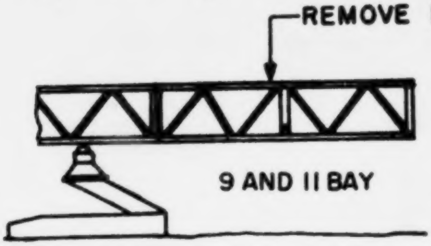
THIS NOSE SECTION REMOVED ONLY WHEN MINIMUM DISTANCE ABOVE IS PAST LANDING ROLLER

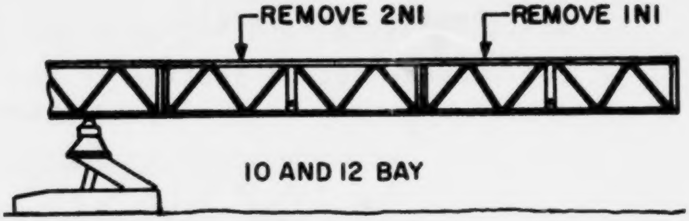
㊼ Remove launching nose heavy sections as they pass landing roller.

Bridge Length	Remove
9 and 11 bay	1N1
10 and 12 bay	1N1 & 2N1

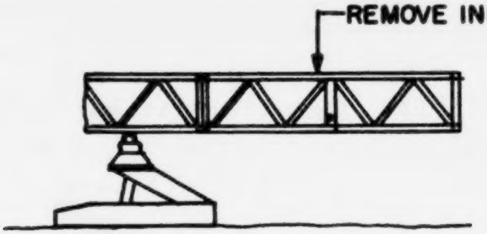
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

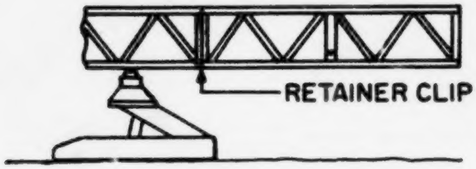




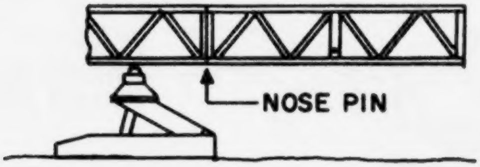
Remove first section of launching nose heavy (1N1).



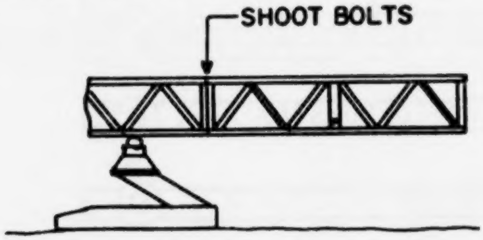
(a) Remove retainer clip from nose pin.



(b) Remove nosepin connecting the two sections.



(c) Lift the nose section and unlock the shoot bolts.



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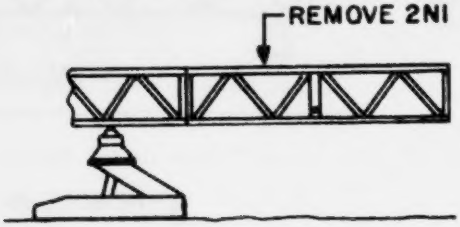
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

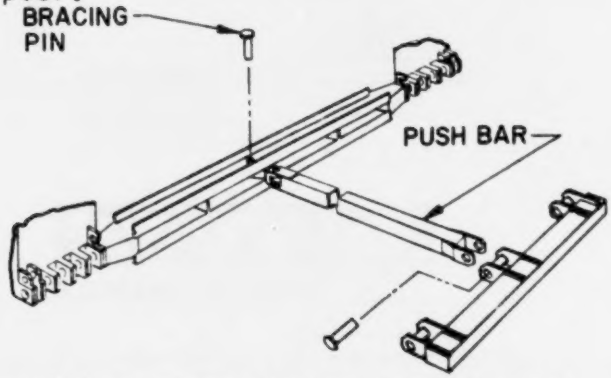
Step 2.a. (Cont).

(d) Remove nose section.

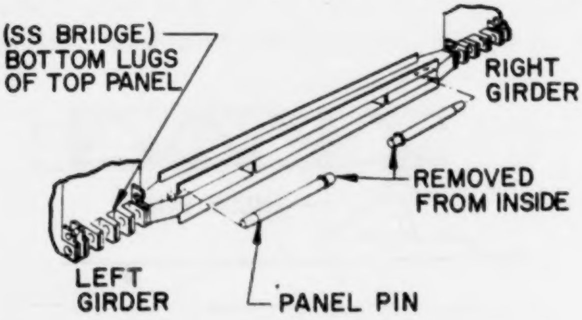
(e) Remove second section if required.



(48) Remove push bar from the push bar cross girder and push bar adapter.



(49) Remove push bar cross girder from the end of bridge.



For 10 bay bridge, PROCEED TO STEP 2.a. (52).

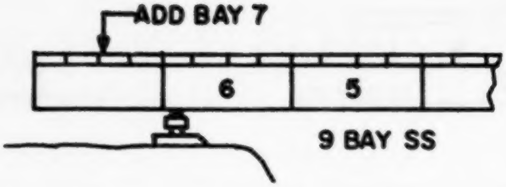
For 11 bay bridge, PROCEED TO STEP 2.a. (51).

For 12 bay bridge, PROCEED TO STEP 2.a. (53).

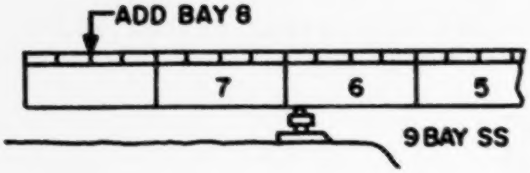
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

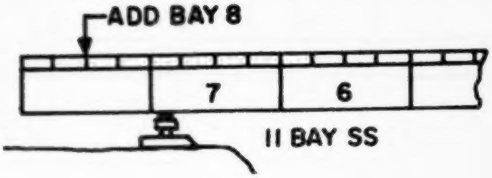
Step 2.a. (Cont).

㊿ Pin top panels of bay 7 to the top panels of bay 6.

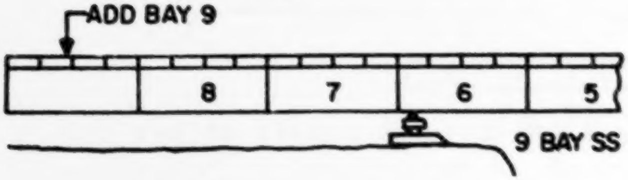


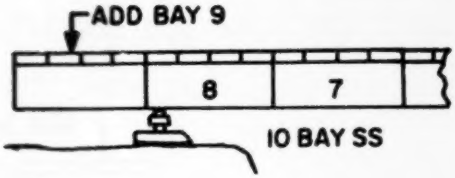
(51) Pin top panels of bay 8 to the top panels of bay 7.

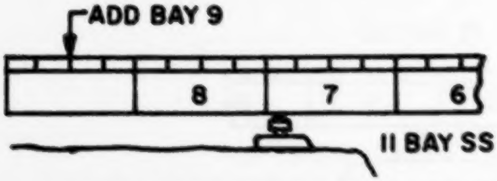




(52) Pin top panels of bay 9 to the top panels of bay 8.





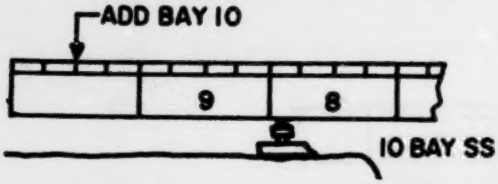


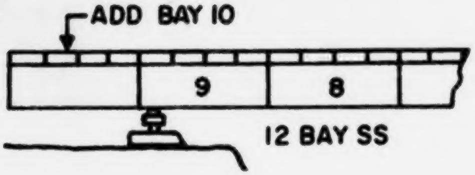
For 9 bay bridge, PROCEED TO STEP 2.a. (56) .

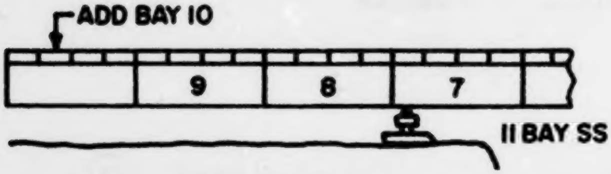
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(53) Pin top panels of bay 10 to the top panels of bay 9.

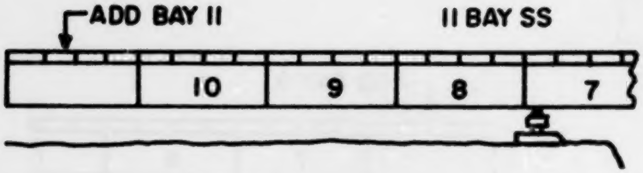


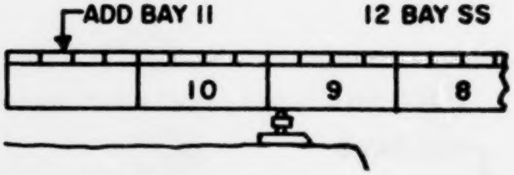




For 10 bay bridge, PROCEED TO STEP 2.a. (56).

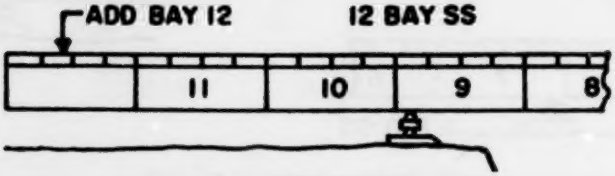
(54) Pin top panels of bay 11 to the top panels of bay 10.





For 11 bay bridge, PROCEED TO STEP 2.a. (56).

(55) Pin top panels of bay 12 to the top panels of bay 11.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

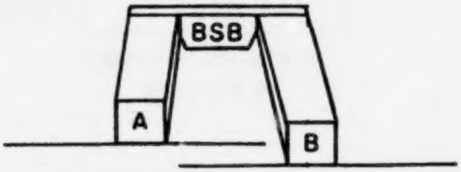
NOTE

Connection of the rear BSB to top panels is described in the next step. The panel pins connecting the BSB to the top panels will be put in for all bridges.

(56) Connecting rear BSB to top panels.

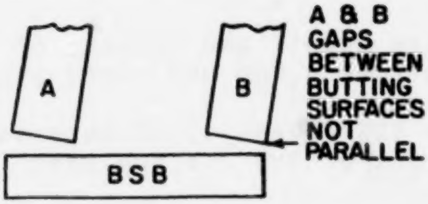
NOTE

The bridge is supported on the roller beam and two building pedestals, one under each girder. The pedestals and the two girders will probably be on different levels, and not square with the BSB.



GIRDERS NOT ON SAME LEVEL

END VIEW



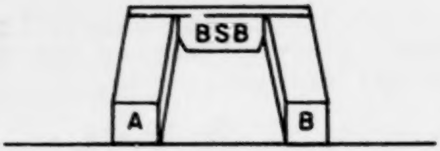
GIRDERS NOT SQUARE

PLAN VIEW

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

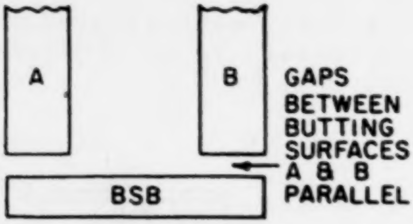
Step 2.a. (Cont).

To connect the BSB to the top panels it will be necessary to level and square the two girders with each other.



GIRDERS ON SAME LEVEL

END VIEW



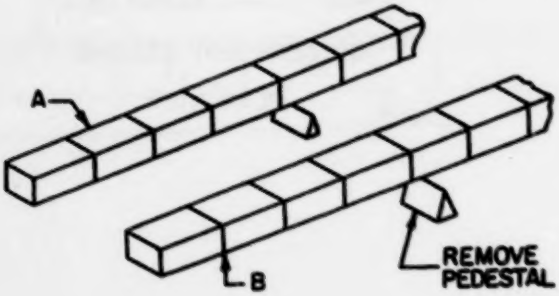
GIRDERS SQUARE

PLAN VIEW

(a) Remove the building pedestal from under girder B so its end can be lowered as well as raised. Unlock roller beam roller under girder B so that it can move over the roller.

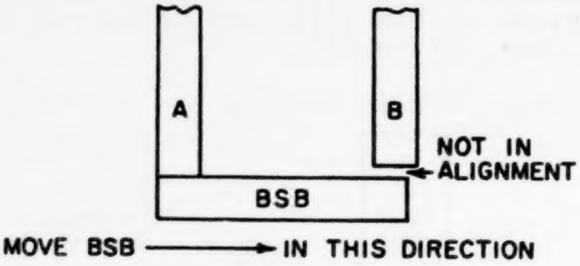
(b) Engage dowels and sockets of bankseat beam and top panel of girder A, DO NOT close shoot bolts.

(c) Move BSB sideways, if necessary, to engage dowels and sockets of BSB and top panel of girder B.

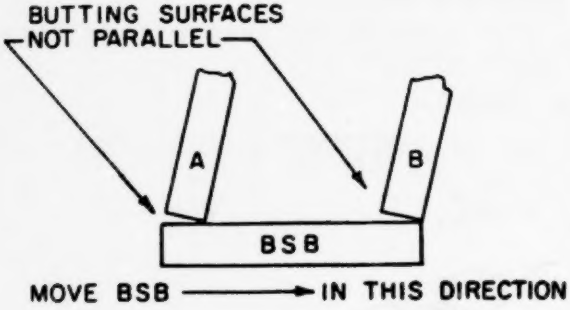


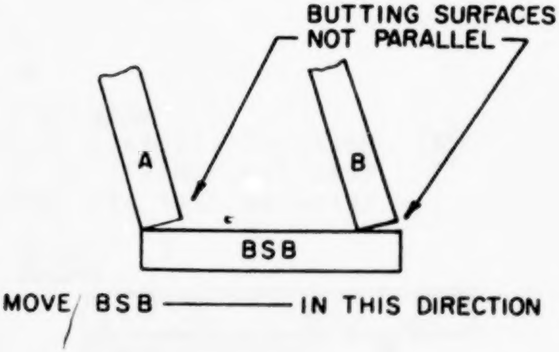
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).



(d) Move BSB sideways in appropriate direction to make the gaps between butting surfaces parallel.





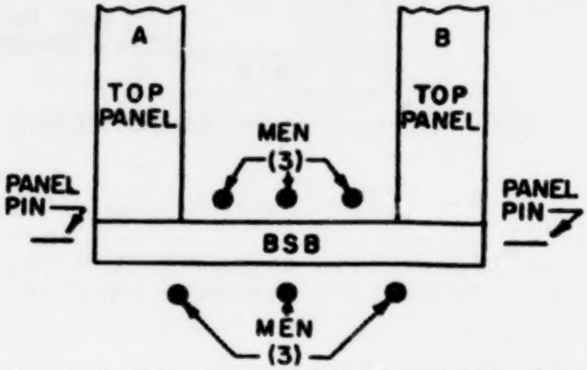
(e) Move bankseat beam up and down at the end of girder B until all shoot bolts can be closed.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

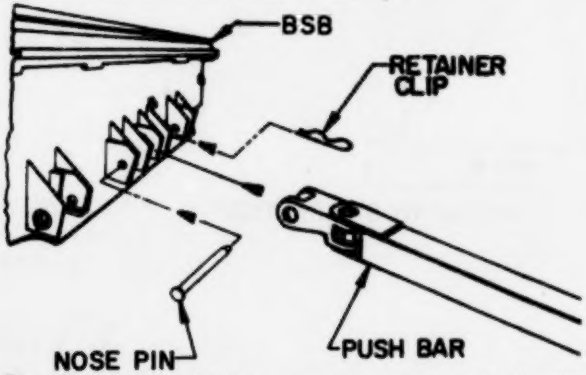
Step 2.a. (Cont).

(f) Insert panel pins into BSB and top panels as three men on inside of BSB lift, and three men on outside of BSB push down on the BSB.

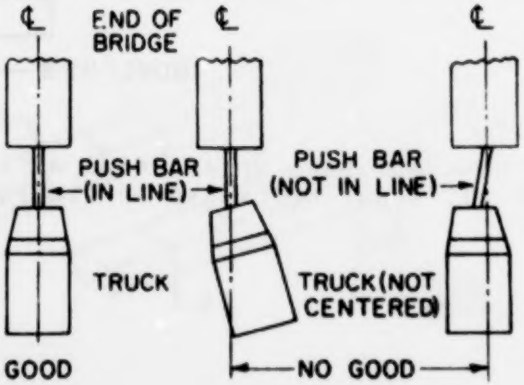
(g) Put retainer clip through the end of panel pin.



(57) Pin short push bar to center bracket of beam with a nose pin. Secure with a retainer clip.



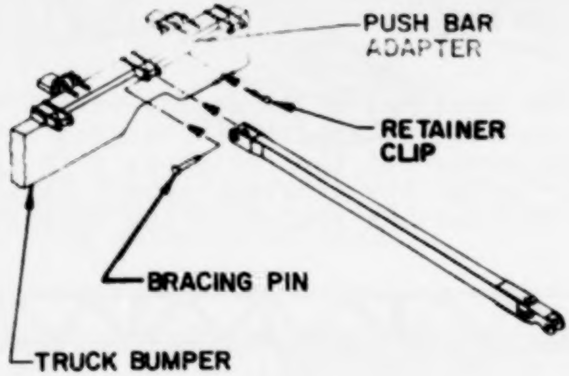
(58) Move vehicle into position near rear of bridge. Ensure that the vehicle is in a straight line with the bridge and centered over the centerline.



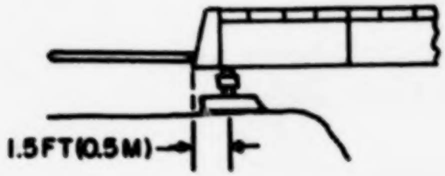
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

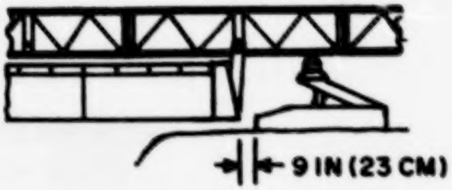
Step 2.a. (Cont).

(59) Pin push bar to adapter with bracing pin and secure pin with retainer clip.



(60) Unlock rollers and launch bridge until either the rear BSB is 1.5 ft (.5 m) from the roller beam, or the front BSB is within 9 in (23 cm) of the LRP. Stop launch, lock rollers.





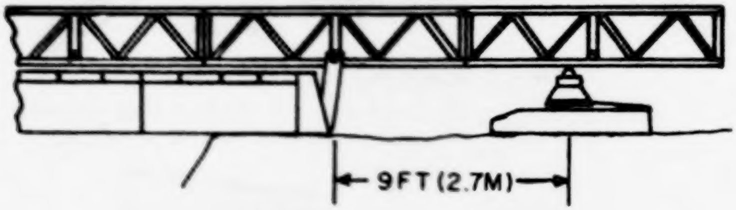
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

WARNING

Carelessness and improper operation of the hydraulic jack in the landing roller pedestal (LRP) may result in serious injury to personnel.

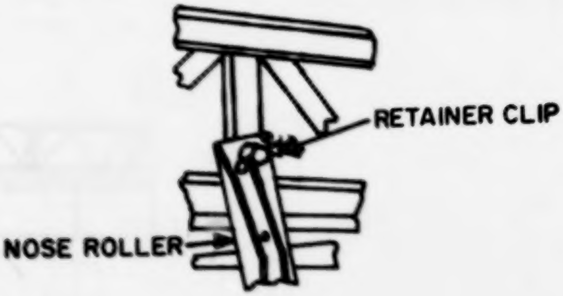
(61) Lower far bank end of bridge by operating jack in landing roller pedestal. Reposition landing roller pedestal so that the center of the roller is 9 ft (2.7 m) from the nose roller on the bankseat beam. Raise LRP until the roller touches the bottom of the launching nose.



(62) Remove launching nose heavy sections until the section resting on the landing roller pedestal is reached.

(63) To remove the last 3 nose sections.

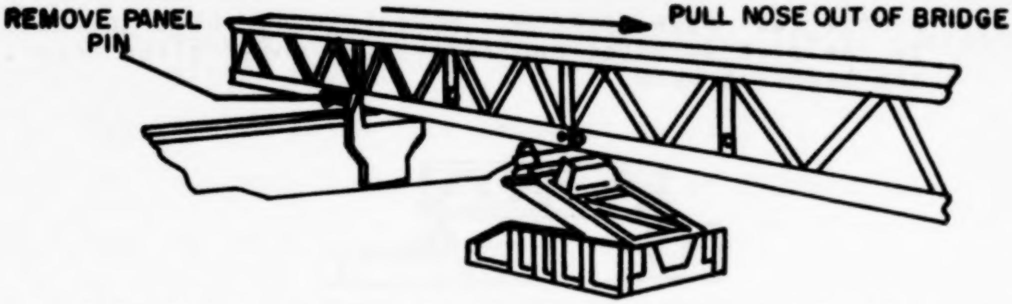
(a) Remove retainer clip from panel pin in nose roller and prepare to remove panel pin.



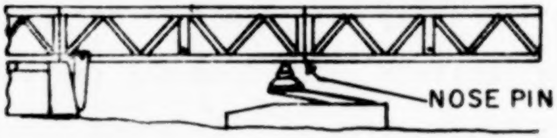
(b) With one man on launching nose cross girder to lift gravity latch, four men pull nose sections away from gap. Panel pin is removed from nose roller as nose is moved.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

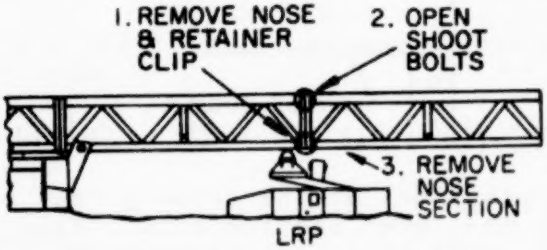
Step 2.a. (Cont).



(c) The four men pull the last three nose sections until the nose pin connecting the first two has passed the landing roller. Stop movement of nose.

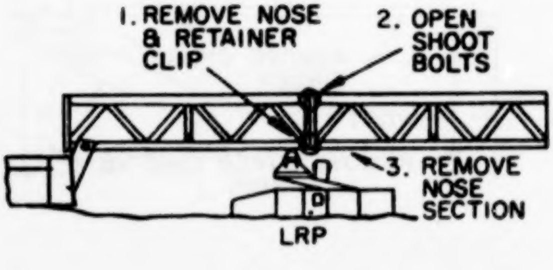


(d) Remove the first nose section by removing retainer clip nose pin and unlocking shoot bolts.



(e) Move the last two nose sections until the nose pin has passed the landing roller.

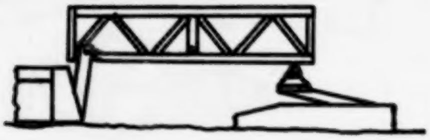
(f) Repeat Step (d) to remove the second nose section.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

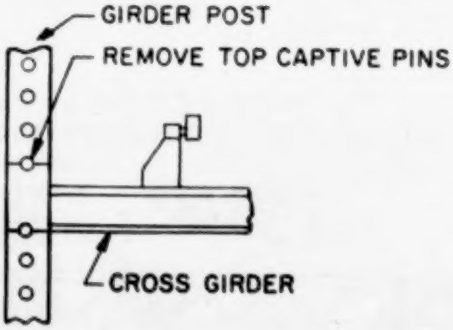
(g) Remove last nose section. Move landing roller pedestal to the side of site, and remove the nose roller from the bankseat beam.



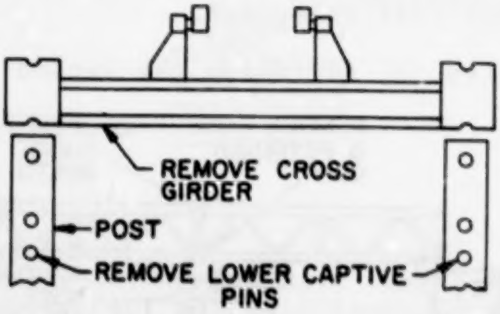
(64) Remove launching nose cross girder with 6 personnel.

(a) Remove retainer clips from all captive pins.

(b) Remove top captive pins in cross girder.



(c) Lift both sides of the cross girder at the same time and remove the lower captive pins. Pull the cross girder upward until it is free from posts. Remove the girder from the bridge.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

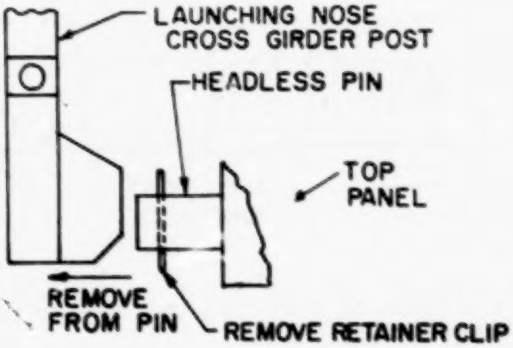
Step 2.a. (Cont).

(d) Remove retainer clip from headless pin in bottom of cross girder posts.

(e) Remove posts from headless pins.

(f) Put retainer clip through end of headless pin.

(g) Far bank crew returns to near bank.

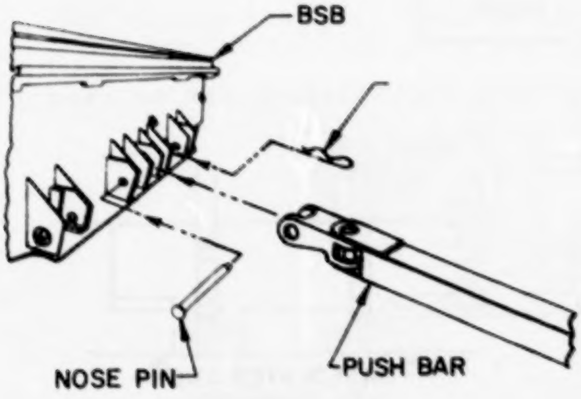


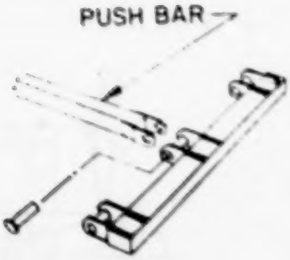
(65) Disconnect vehicle from bridge.

(a) Move vehicle slightly to release tension on pins.

(b) Remove retainer clip and nose pin from push bar at bankseat beam.

(c) Remove retainer clip and bracing pin from push bar adapter.





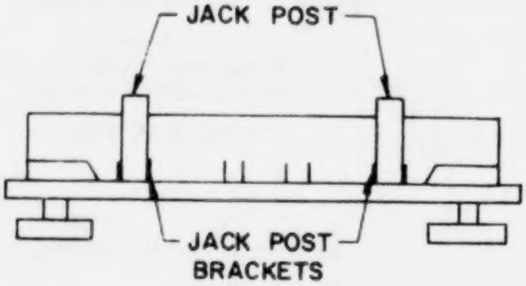
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

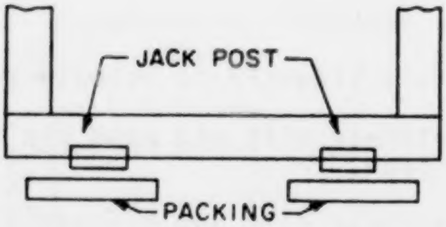
(66) Pin a jack post to the outside jack post bracket on each end of the near bank BSB.

(a) Put a retainer clip through the end of the nose pin.

(b) The wedge on the jack post is between the post and ramp ledge of the BSB.

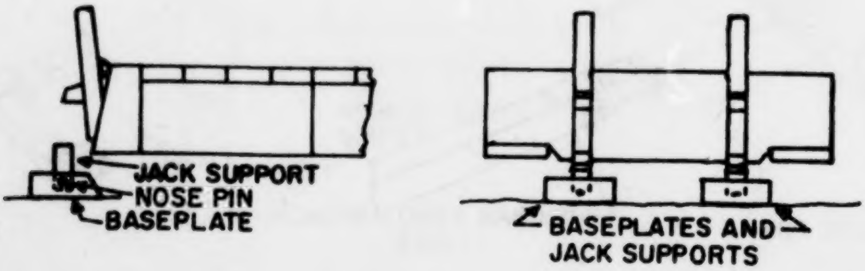


(67) Place 1 piece of packing on the ground under the jack post, parallel to the BSB.



NOTE

The single story baseplate with jack support can be used if ground conditions are bad.

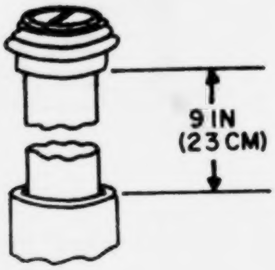


2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

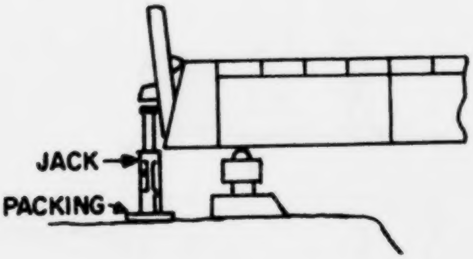
Step 2.a. (Cont).

NOTE

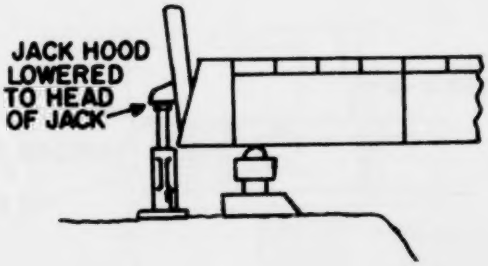
Before placing the jack under the jack post, the jack ram must be extended 9 in (23 cm). DO NOT pull on the head of the jack.



(68) Operate the jack by hand to the height required. Place the jack on packing so the long-side of the jack base is parallel to the BSB.



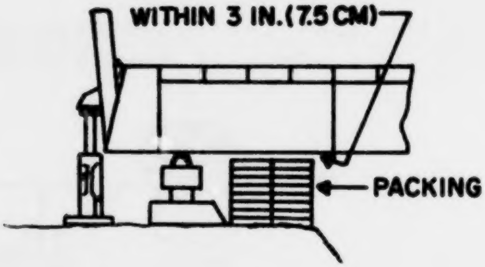
(69) Lower the jack hood to the jack head. Ensure that the jack head fits into the recess in the jack hood.



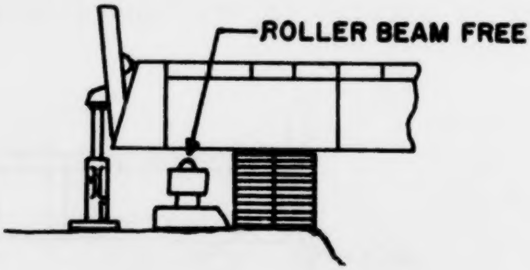
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

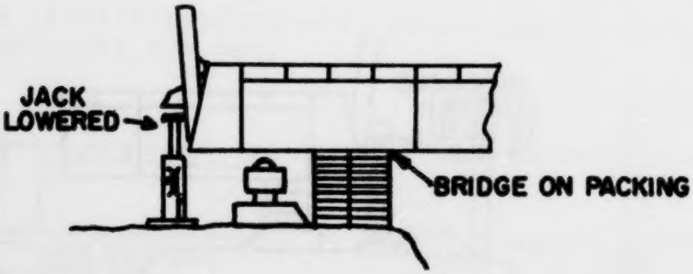
(70) Stack packing under the bridge girders until the packing is within 3 in (7.5 cm) of the bottom of the girders.



(71) Operate jacks to raise the bridge from the roller beam. Raise until more packing can be inserted between the stack and girder.



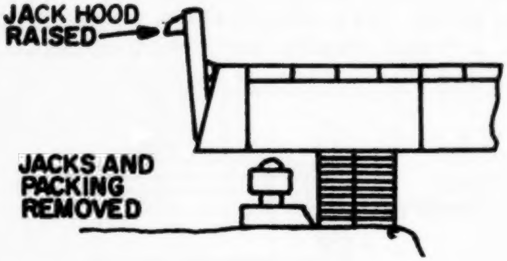
(72) Operate jacks to lower the bridge onto packing. Stop lowering when the jack is free from the jack hood. DO NOT lower jack all the way.



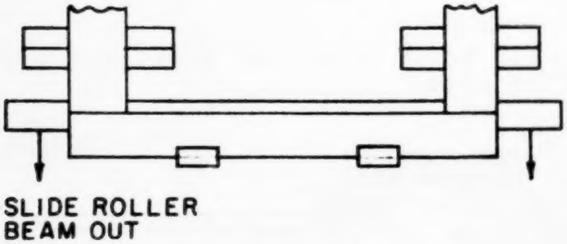
(73) Remove the jacks and packing from under the jack posts. Secure the jack hood in the top of the jack post.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

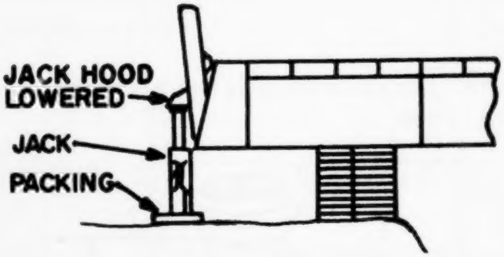
Step 2.a. (Cont).



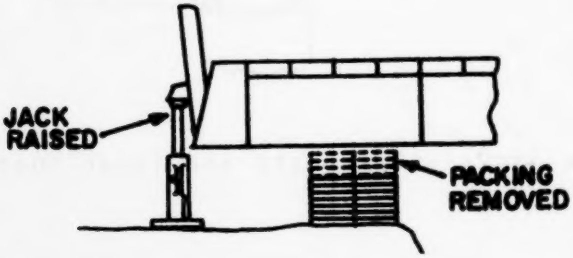
(74) Slide the roller beam from under the end of bridge and disassemble.



(75) Place packing and jacks under the jack post. Lower jack hood to jack head.



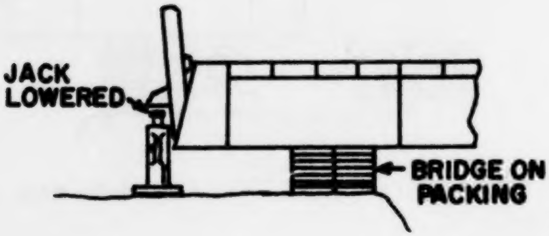
(76) Raise jacks to take weight of bridge from packing. Remove no more than 3 layers of packing.



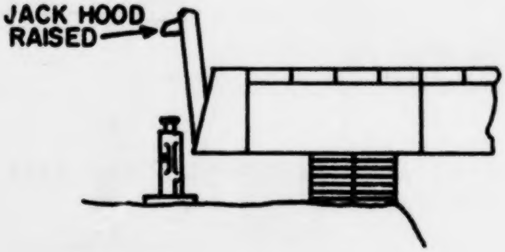
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

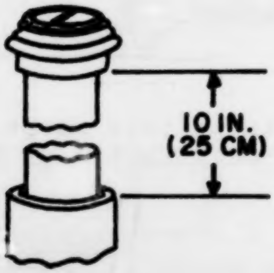
⑦⑦ Lower the bridge until the jacks are almost completely down. Ensure that the jacks will be free to be removed when the bridge rests on the packing.



(a) Lift jack hoods from the jacks and secure in the top teeth of post.



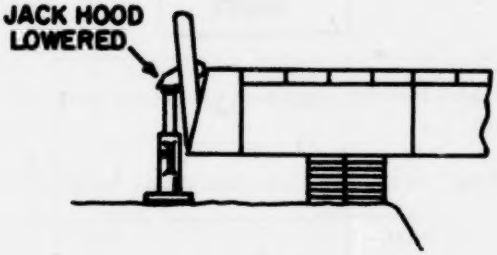
(b) Remove the jacks and operate by hand to extend ram 10 in (25 cm).



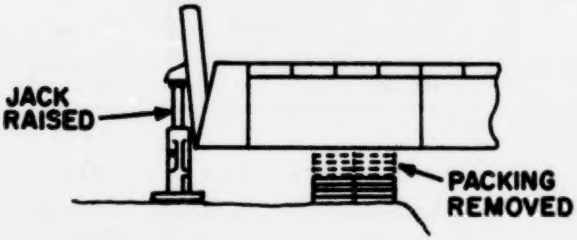
(c) Place jacks under posts and lower hood to jack head.

2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

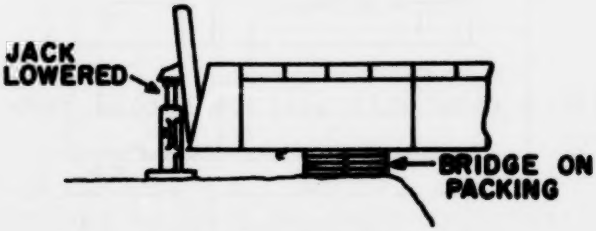
Step 2.a. (Cont).



(d) Operate the jacks to raise the bridge from the packing. Remove no more than 3 layers of packing.



(e) Operate the jacks to lower the bridge onto packing or bank. If lowered onto packing repeat (a) through (d) to reposition jacks to get the bridge onto the bank.



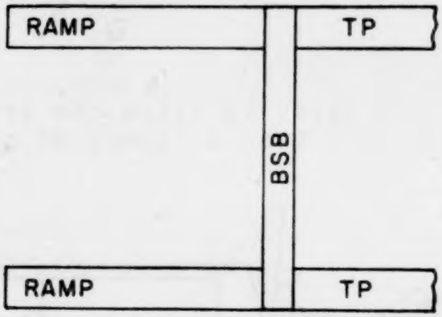
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

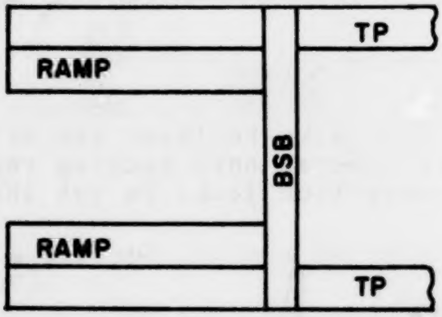
NOTE

Make sure that antilift lugs are engaged on all ramp units except center unit.

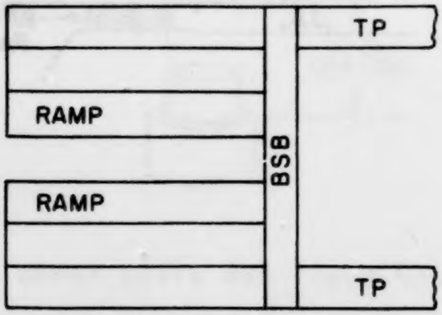
(78) Hook outside ramp units on near bank bankseat beam.



(79) Hood second ramp units next to outside ramp unit.



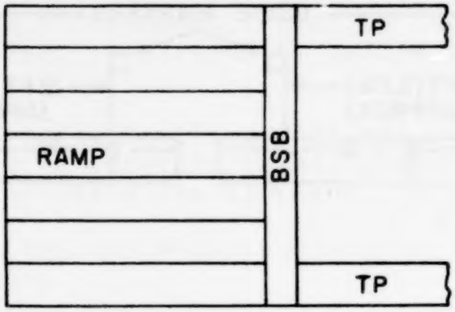
(80) Put third ramp unit next to second ramp unit.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(81) Hook center ramp unit on bankseat beam and drop other end to ground.

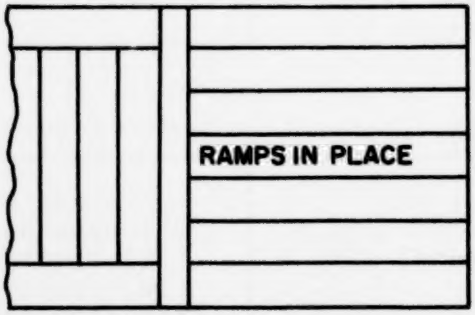


NOTE

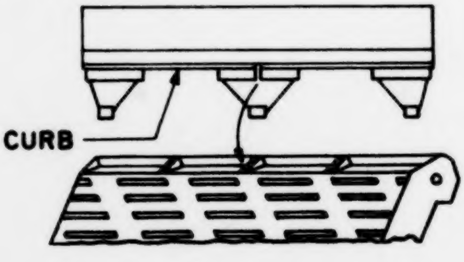
Bankseat beam does not have anti-lift lugs for center ramp unit.

(82) Starting on near bank side of bridge, hook deck units on inside top panel rails.

(83) Put ramp units on far bank end of bridge.



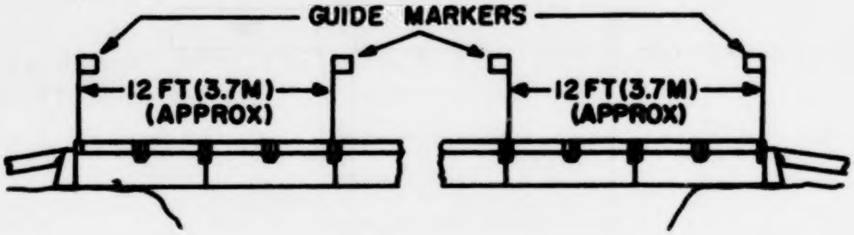
(84) Hook all curbs on outside edges of bridge. Start on near bank end of bridge.



2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(85) Put bridge guide markers in place.



NOTE

After the bridge has passed inspection, put bridge classification signs in place. Make sure that all erection equipment is away from the roadway. The bridge is now ready to use.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site).

a. This paragraph describes the step by step procedures for the disassembly of all the Single Story - 9 through 12 Bay Bridges.

b. The disassembly procedures are basically the reverse of assembly, but there are differences, refer to Table 2-27. Because of these differences the user is advised to follow the step by step procedures carefully.

c. Once the user becomes familiar with the step by step procedures of disassembly, it will be possible to disassemble any Single Story 9 through 12 bay bridge by using the De-Launch Table 2-28.

d. This table provides the necessary instructions to disassemble and de-launch all bridges.

e. DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

Table 2-27. Required Steps Per Bridge Length.

9	10
1.a and b 2.a(1) through (32) (36) through (41) (49) through (69)	1.a and b 2.a(1) through (32) (35) and (36) (39) through (41) (44) and (45) (47) through (69)

11	12
1.a and b 2.a(1) through (32) (34) through (37) (39) through (41) (46) through (69)	1.a and b 2.a(1) through (35) (39) through (69)

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Table 2-28. De-Launch Table - 9 thru 12 Bay Single Story (Normal Site)

Bridge ft. Length m	56 17.1	62 18.9	68 20.7	74 22.6
No. of Bays	9	10	11	12
Nose Construction	5N1	5N1	6N1	6N1
Build	Notes a thru d	Notes a thru d	Notes a thru d	Notes a thru d
Boom To and Remove	6p7 BSB, 9, 8, and 7	8p7 BSB,10 and 9	7p7 BSB, 11, 10, 9, and 8	9p7 BSB, 12, 11, and 10
ADD	Note e	Note e	Note f	Note f
Boom To and Recover	1p5 LRP	2p4 LRP	1p5 LRP	2p4 LRP
Boom To and Remove		2p0 8		2p1 9
Boom To and Remove		1p4 7		1p5 8
Boom To and Remove			1p4 6N1 and 7	1p4 6N1 and 7
Boom To and Remove	1p2 5N1, 4N1, 3N1, and 6	1p2 5N1, 4N1, 3N1, and 6	1p2 5N1, 4N1, 3N1 and 6	1p2 5N1, 4N1, 3N1 and 6
Remove	2N1 and 5	2N1 and 5	2N1 and 5	2N1 and 5
Remove	1N1 and 4	1N1 and 4	1N1 and 4	1N1 and 4
Remove	LLN	LLN	LLN	LLN
Position BP at	2p7	2p7	2p7	2p7
Remove	3	3	3	3
Boom To	BSB	BSB	BSB	BSB
Position BP at	1p7	1p7	1p7	1p7
Remove	2 and 1	2 and 1	2 and 1	2 and 1
Complete By:	Note g	Note g	Note g	Note g

NOTES:

a. Position RB under RBSB.
b. Position center of LR (in LRP) 9 ft (2.7 m) from BSB.
c. Position BP 15 ft (4.6 m) behind RB.
d. Add 3 LNH, reposition LRP [base 9 in (23 cm) from BSB]. Add LNH 4.
e. Add 5N1 and LLN.
f. Add 5N1, 6N1 and LLN.
g. Remove BSB, clear site.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

This paragraph provides the steps to disassemble all of the Single Story - 9 through 12 bay - MGB's on the original near bank. The bridge can be disassembled on the original far bank or near bank. If the bridge is to be disassembled on the far bank, the erection equipment and launching nose parts must change sides.

Step 1. Preparation for Disassembly.

a. If pumps, hoses and water are available, the bridge, erection and link components should be washed before loading them on pallets. When washing is to be done, the parts are taken from the bridge to the washing area, then loaded on the proper pallet.

Step 2. Disassembly.

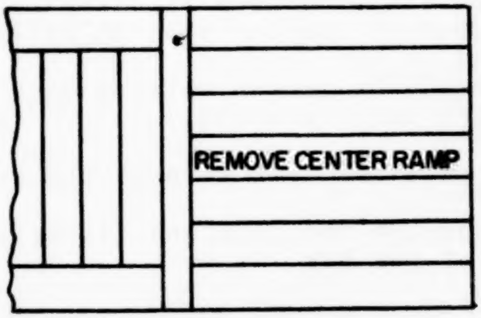
a. Steps needed to disassemble the bridge are as follows:

① Remove bridge classification signs.

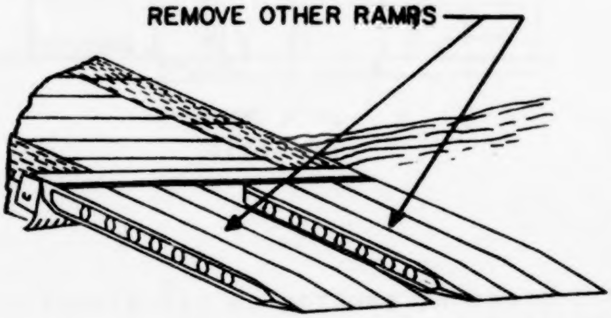
② Remove bridge guide markers.

③ Remove all curbs.

④ Remove center ramp unit on far bank.



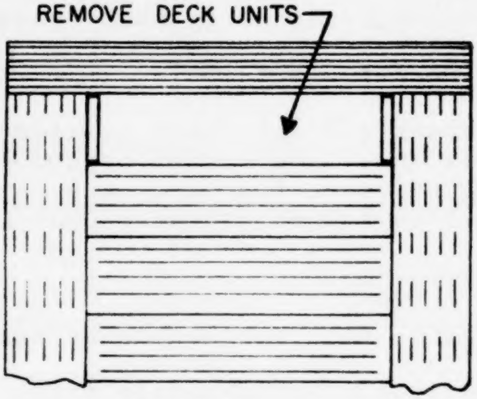
⑤ Remove the remaining ramp units on far bank.



2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

⑥ Take off all deck units. Start on far bank end of bridge.



⑦ Take off ramp units on near bank.

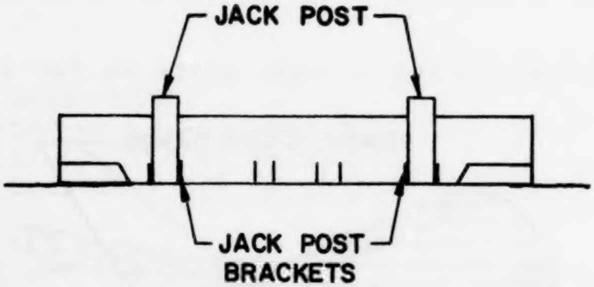
NOTE

The near bank end of bridge is always raised and placed on a roller beam before the far bank is raised.

⑧ Pin a jack post to the outside jack post bracket on each end of the near bank BSB.

(a) Put a retainer clip through the end of the nose pin.

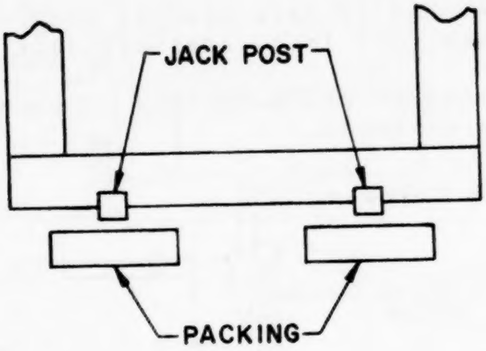
(b) The wedge on the jack post is between the post and ramp ledge of the BSB.



⑨ Place 1 piece of packing on the ground under the jack post, and parallel to the BSB.

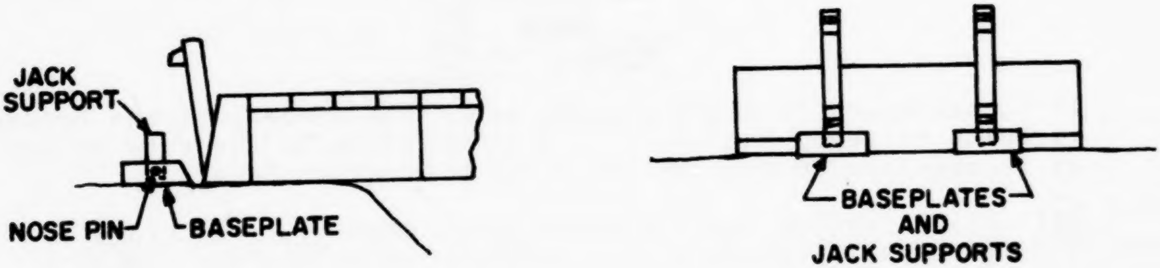
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

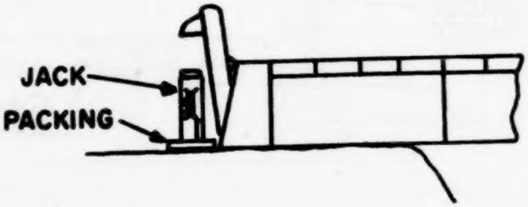


NOTE

The single story baseplate with jack support can be used if ground conditions are bad.



⑩ Place jack on packing so the longside of jack base is parallel to the BSB.

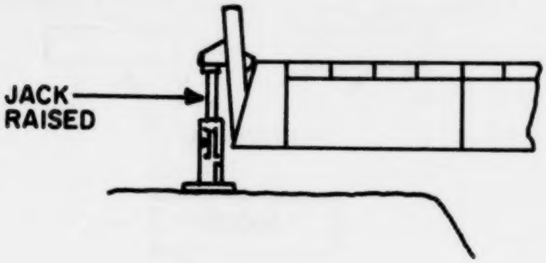


2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

⑪ Lower jack hood of jack post to head of jack. Ensure that head of jack fits into recess in jack hood.

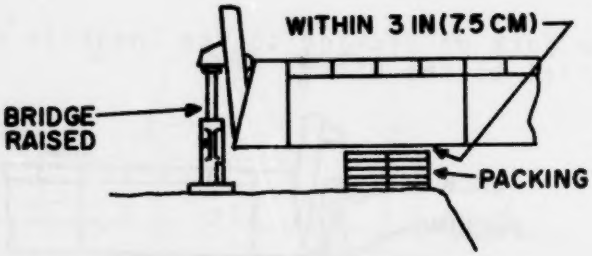
⑫ Operate jacks to raise bridge. Stop when the jacks are completely extended.



NOTE

It is necessary to place packing under the girders as the bridge is being raised. Packing is placed as close to the edge of gap as is possible to provide space for the roller beam.

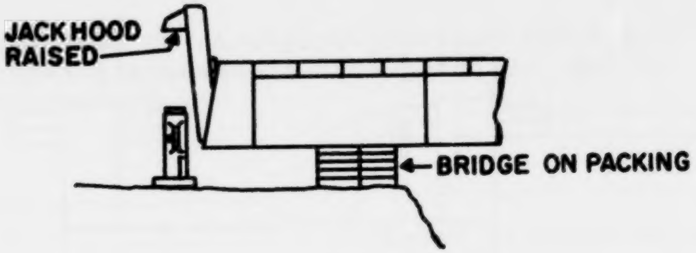
⑬ Place packing under girders until packing is within 3 in (7.5 cm) of girder.



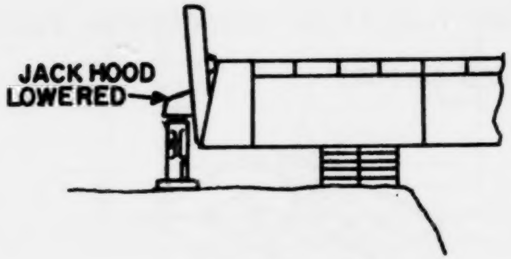
⑭ Operate jacks to lower bridge onto packing. Secure jack hood in top teeth of post.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

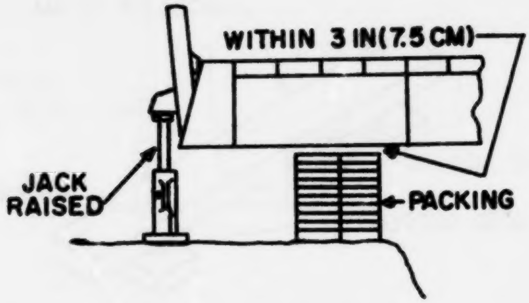
Step 2.a. (Cont).



⑮ Push jack head all the way down. Reposition jack hood on head of jack.



⑯ Operate jacks to raise bridge. Place packing under girder as bridge is raised until packing is within 3 in (7.5 cm) of girder.



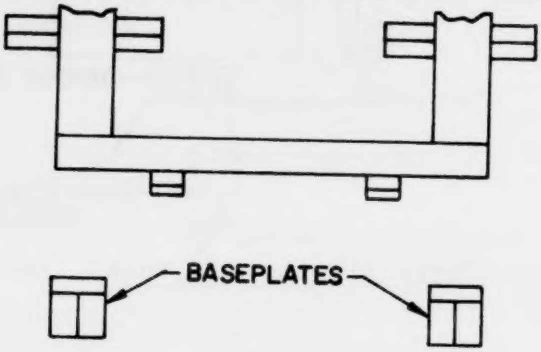
⑰ Repeat Steps (14) through (16) to raise bridge high enough to slide assembled roller beam under the end of bridge. Remove jacks and packing.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

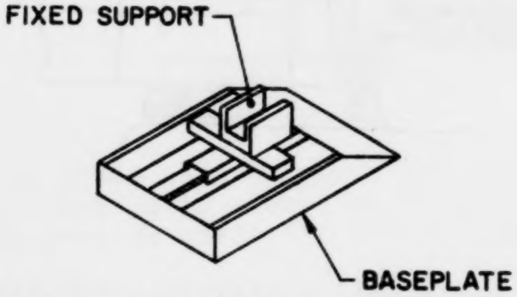
Step 2.a. (Cont).

⑱ Assemble roller beam near the near bank end of bridge.

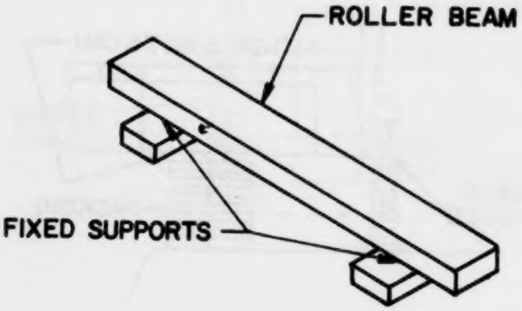
(a) Put fixed support baseplates on ground near the end of bridge. Sloping edge of baseplate faces gap.



(b) Place roller beam fixed supports on baseplates.



(c) Place roller beam on roller beam fixed supports.

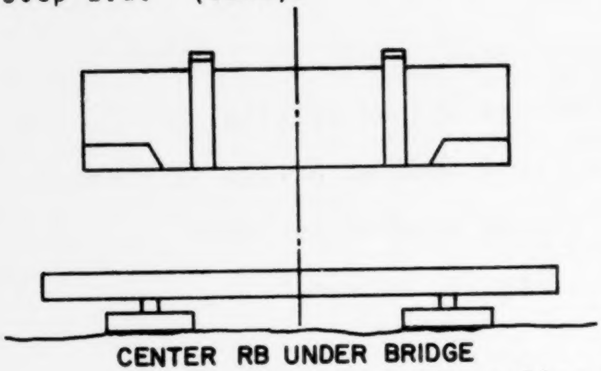


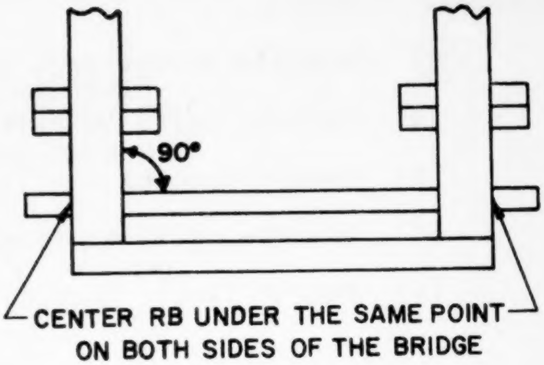
⑲ Slide roller beam under the end of bridge.

(a) Ensure that the roller beam is centered under the bridge.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

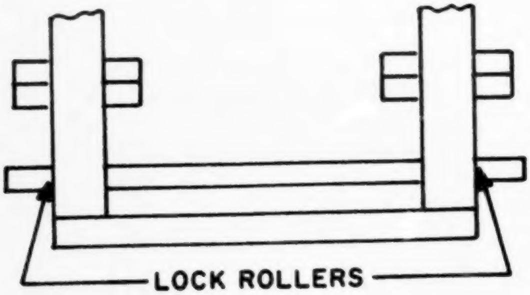
Step 2.a. (Cont).



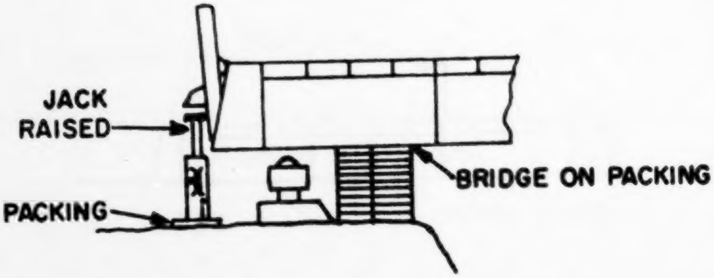


(b) Ensure that the roller beam is positioned at a right angle (90°) to the bridge.

(c) Ensure that the roller beam rollers are locked.



⑳ Place packing and extended jacks under jack posts. Lower jack hoods to jack heads.



NOTE

Jacks must be extended more than the distance between roller beam rollers and bottom of girder.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

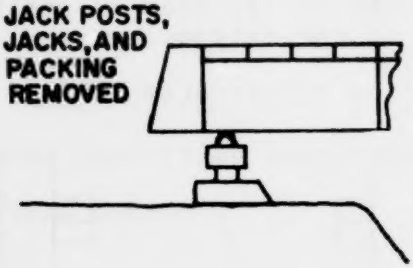
㉑ Lowering bridge onto roller beam.

(a) Operate jacks to raise bridge off of packing.

(b) Remove packing one layer at a time as bridge is lowered.

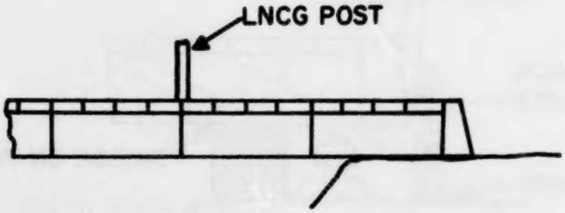
(c) Operate jacks to lower bridge onto roller beam.

(d) Remove jacks, jack posts and all packing.



㉒ To install launching nose cross girder (LNCG) posts on far bank end of bridge.

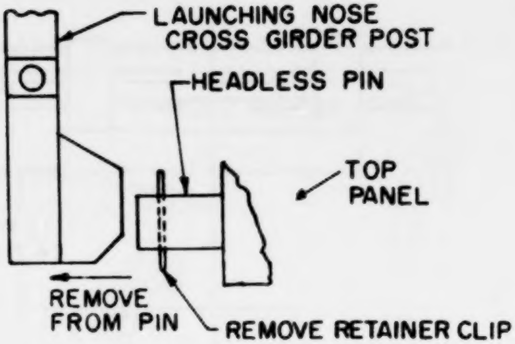
(a) Position LNCG posts on headless pins and lugs on top panels in the 2nd and 3rd bay of bridge.



(b) Secure LNCG posts to top panels with retainer clip. Pin each end of headless pins.

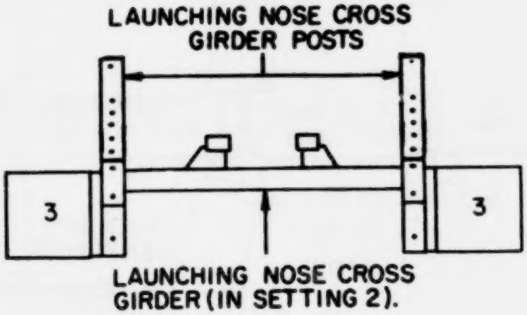
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).



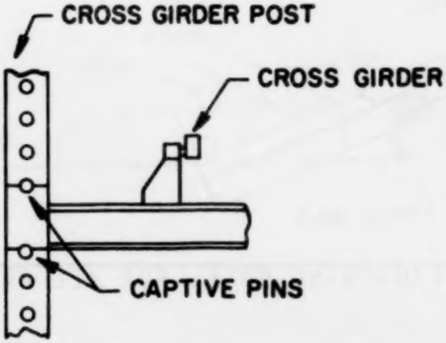
㉓ To install launching nose cross girder (LNCG) on posts:

(a) Position LNCG at height required.


LAUNCHING NOSE CROSS GIRDER POSTS
3
3
LAUNCHING NOSE CROSS GIRDER (IN SETTING 2).

(b) Put captive pins through LNCG and posts.

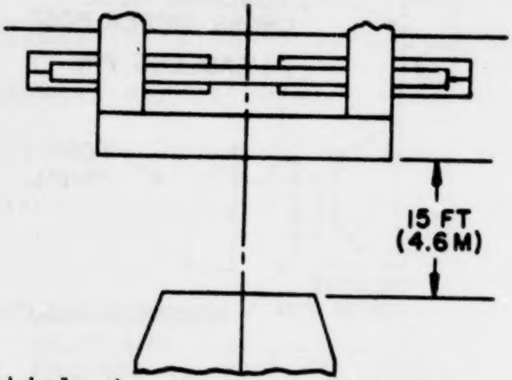
(c) Secure captive pins with retainer clip.



2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

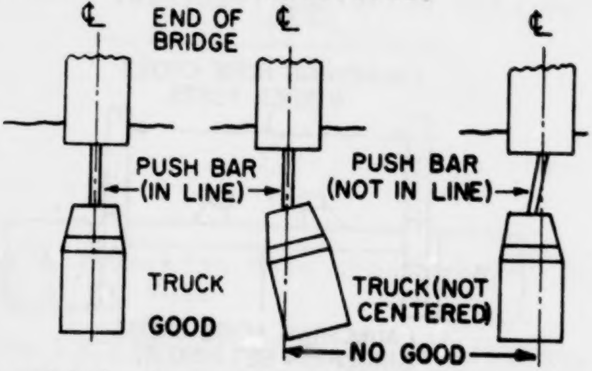
Step 2.a. (Cont).

㉔ Move vehicle into position about 15 ft (4.6 m) from end of bridge.

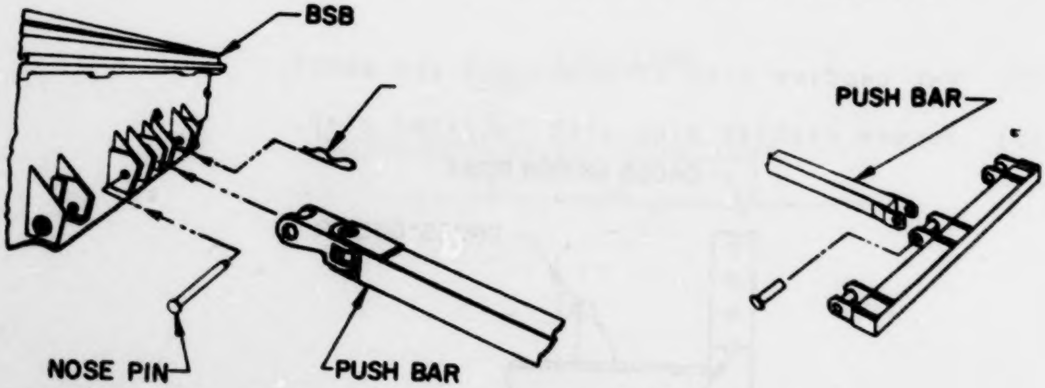


(a) Ensure vehicle is straight with bridge.

(b) Center vehicle over centerline.



㉕ Connect vehicle to bridge with short push bar.



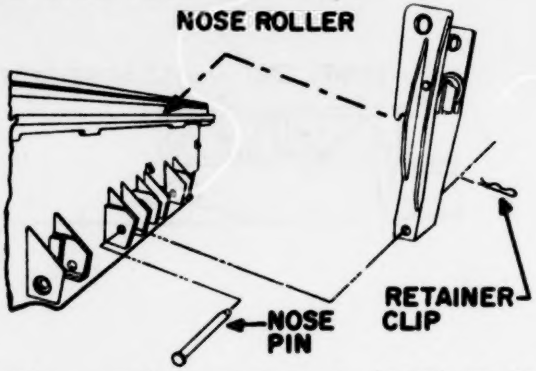
PREPARE TO ASSEMBLE LAUNCHING NOSE, FOR ALL BRIDGE LENGTHS PROCEED TO Step 2.a. ㉖.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

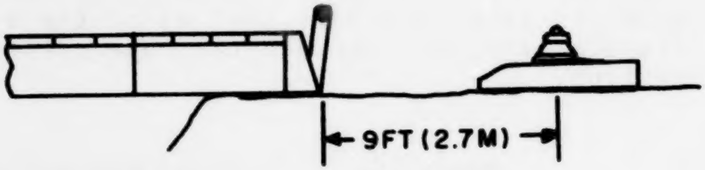
Step 2.a. (Cont).

㉖ To assemble launching nose:

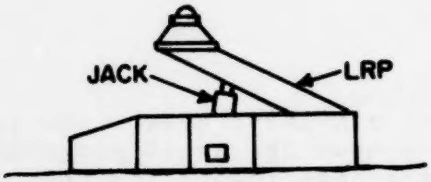
(a) Pin launching nose roller to far bank BSB with nose pin, and secure with retainer clip.



(b) Place landing roller pedestal (LRP) 9 ft (2.7 m) from BSB. This distance is measured from nose roller to center of landing roller.



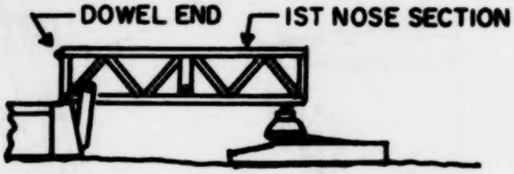
(c) Place partly raised [about 6 in (15.0 cm)] 20 ton jack in the LRP. Ensure that jack is seated in base of LRP and that the hood of LRP is on head of jack correctly.



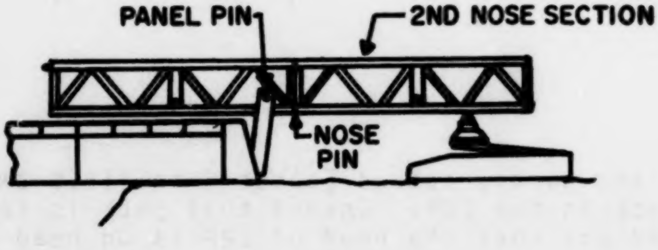
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(d) Place first heavy nose section on nose roller and LRP. Dowel end of nose section faces cross girder. Place a panel pin through the nose roller and nose section.



(e) Connect and pin second heavy nose section to first section. Remove the panel pin from the nose roller and move the nose toward the LNCG. Stop movement when the nose pin is within 1 ft (0.3 m) of the nose roller. Place a panel pin through the nose roller and nose section.



(f) Connect and pin third heavy nose section to second section. Remove the panel pin from the nose roller and move the nose toward the LNCG. Nose has to be guided into rollers of LNCG. Stop movement when the anchorage tube of the second nose section is aligned with the holes in the nose roller.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

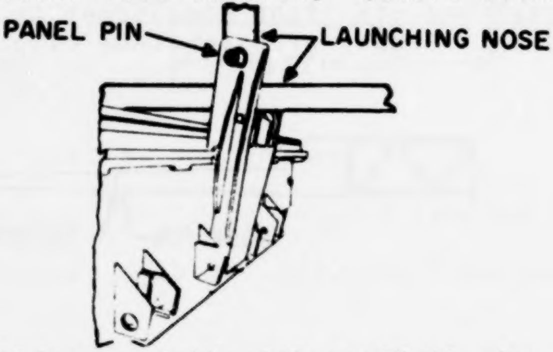
Step 2.a. (Cont).

㉗ To complete a single story nose.

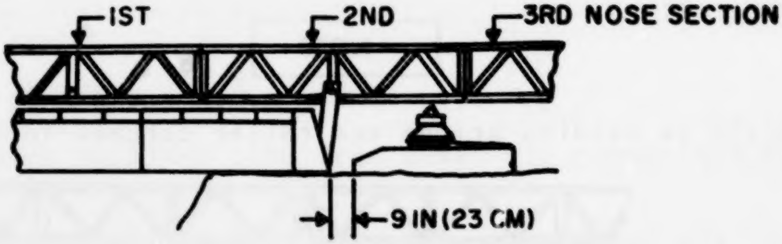
NOTE

The remaining nose sections (heavy and light) may not be put on until de-launch begins. This would be the case of the site conditions were restricted on the far bank.

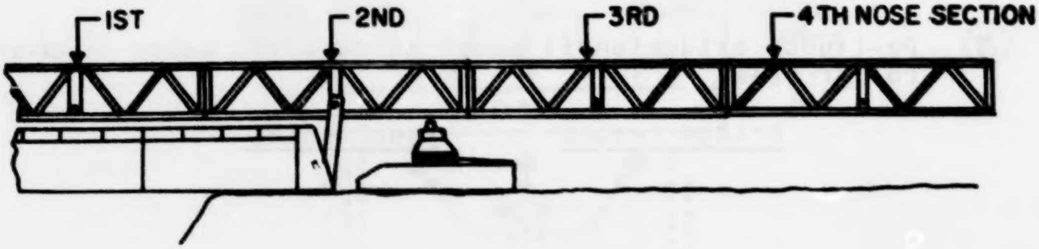
(a) Place a panel pin through the nose roller and anchorage tube of second nose section. Secure with retainer clips.



(b) Move the LRP toward the BSB until the base of LRP is within 9 in (23 cm) of BSB.



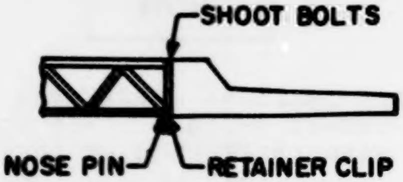
(c) Connect and pin as many heavy nose sections as is needed for the bridge. Do not move the launching nose into the LNCG.



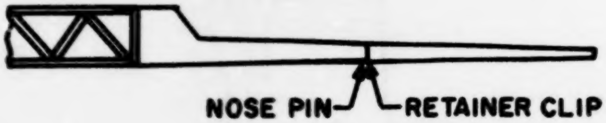
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(d) Connect and pin light nose rear section to the last heavy nose section. Secure with retainer clip.



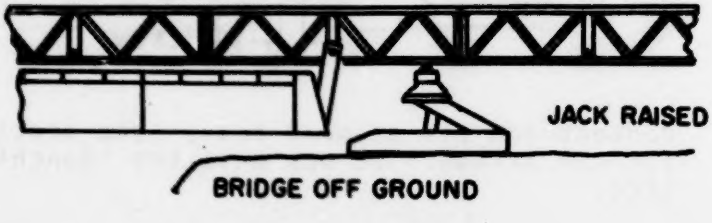
(e) Connect and pin light nose front to the light nose rear section. Secure with retainer clip.



㉘ Using LRP, raise bridge off ground until jack is fully extended.

NOTE

Vehicle is holding bridge and roller catches in RB are locked.



㉙ De-launch bridge until panel point given below is over the roller beam.

Bridge Length	Panel Point
9	6p7
10	8p7
11	7p7
12	9p7

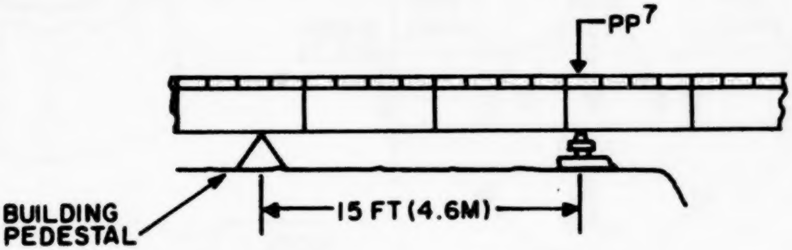
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(a) Unlock rollers, de-launch bridge to panel point given.

(b) Stop de-launch, lock rollers.

(c) Raise bridge to position building pedestals under girders 15 ft (4.6 m) from center of roller beam.



(30) Disconnect vehicle from bridge.

(a) Move vehicle slightly to release tension on pins.

(b) Remove retainer clip and nose pin from push bar at bank-seat beam.

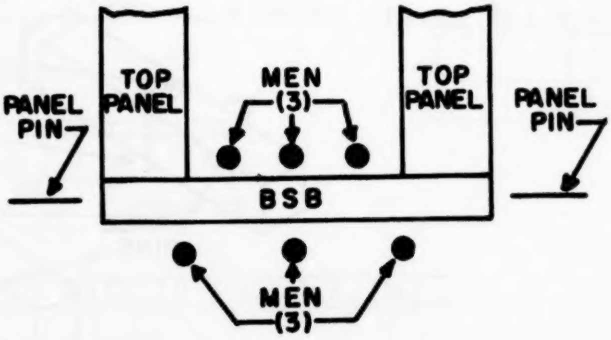
(c) Remove retainer clip and bracing pin from push bar at push bar adapter.

(d) Move vehicle at least 20 ft (6.1 m) from the rear of bridge.

(31) Removing BSB.

(a) Remove retainer clip from panel pin connecting BSB to top panels.

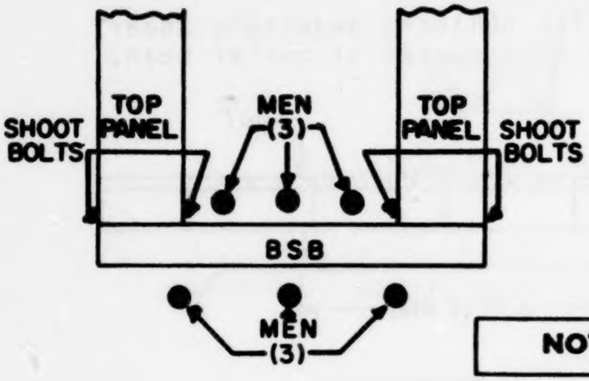
(b) With three personnel lifting on inside of BSB, and three personnel pushing down on the outside of BSB, remove panel pin from BSB.

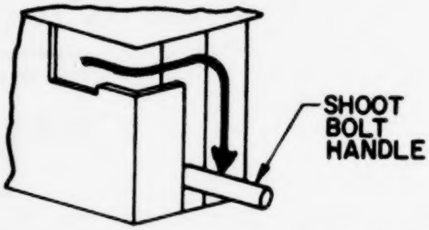


2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(c) With six personnel lifting on BSB, unlock shoot bolts by lifting and turning handle to the right, then pushing shoot bolt handle down.





NOTE

Always remove the panel pin before unlocking the shoot bolt when removing one panel or BSB from another.

(d) Remove BSB from top panels.

For 9 bay bridge, PROCEED TO STEP 2.a. ㉟.

For 10 bay bridge, PROCEED TO STEP 2.a. ㉞.

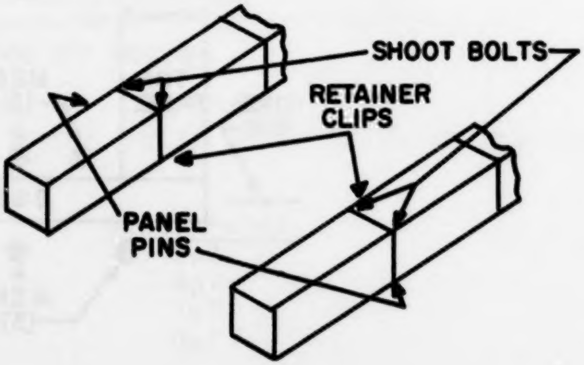
For 11 bay bridge, PROCEED TO STEP 2.a. ㉝.

㉜ Remove bay 12 top panel.

(a) Remove retainer clip and panel pin.

(b) Unlock shoot bolts.

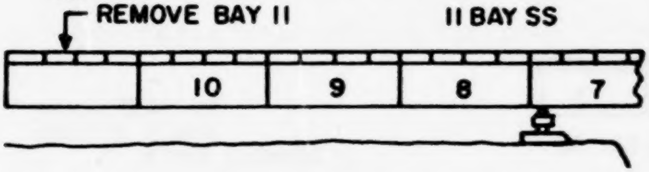
(c) Remove top panel.

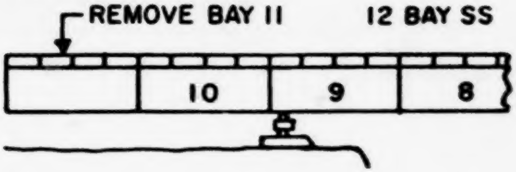


2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

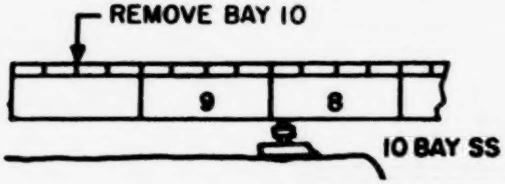
Step 2.a. (Cont).

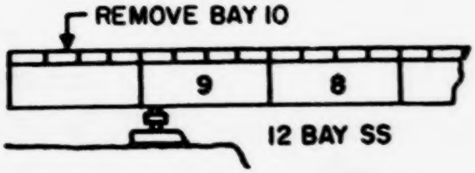
㉝ Remove bay 11 top panel.

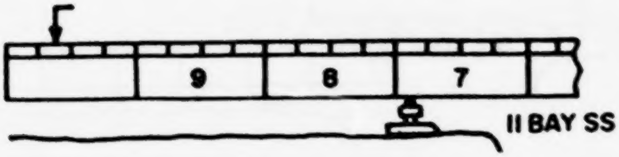




㉞ Remove bay 10 top panel.

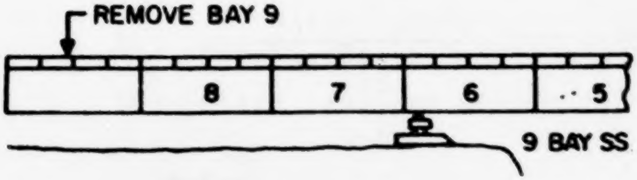


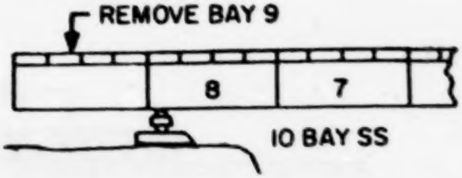


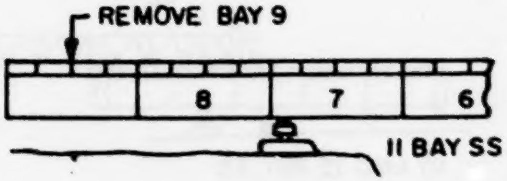


For 12 bay bridge, PROCEED TO STEP 2.a. ㊳.

㉟ Remove bay 9 top panel.





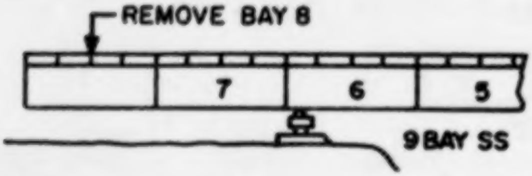


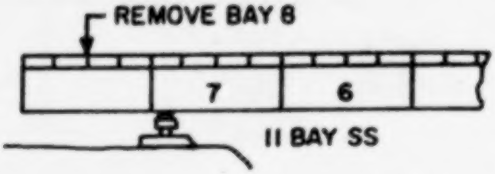
For 10 bay bridge, PROCEED TO STEP 2.a. ㊳.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

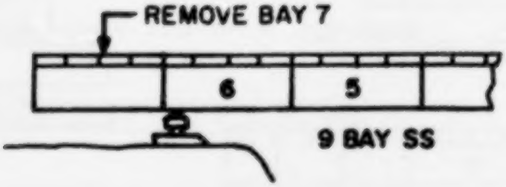
㊱ Remove bay 8 top panel.





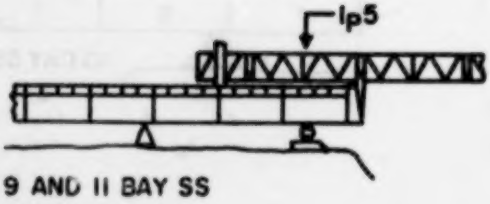
For 11 bay bridge, PROCEED TO STEP 2.a. ㊳.

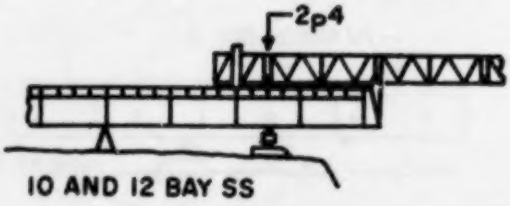
㊲ Remove bay 7 top panel.



㊳ De-launch to panel point given below for bridge being disassembled.

Bridge Length	Panel Point
9	1p5
10	2p4
11	1p5
12	2p4



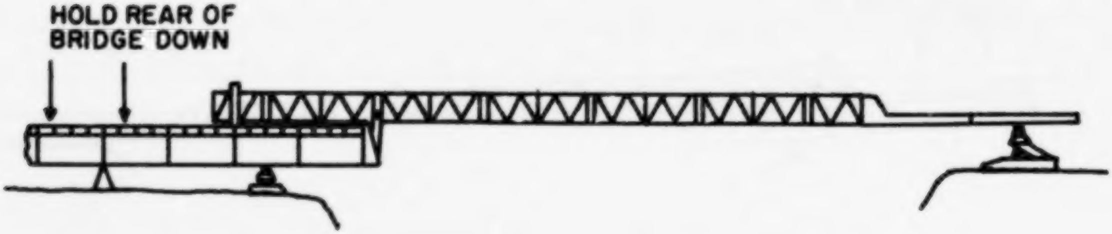


2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

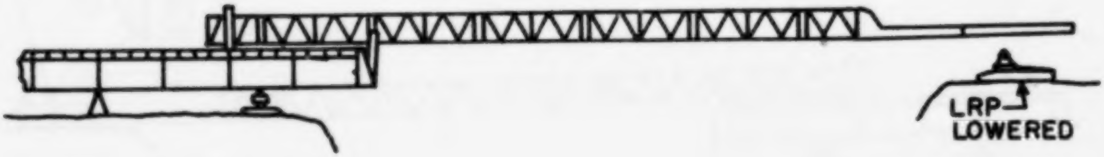
Step 2.a. (Cont).

㊴ Recover LRP.

(a) Hold rear of bridge down on RB and BP.



(b) Operate jack in LRP to lower it.



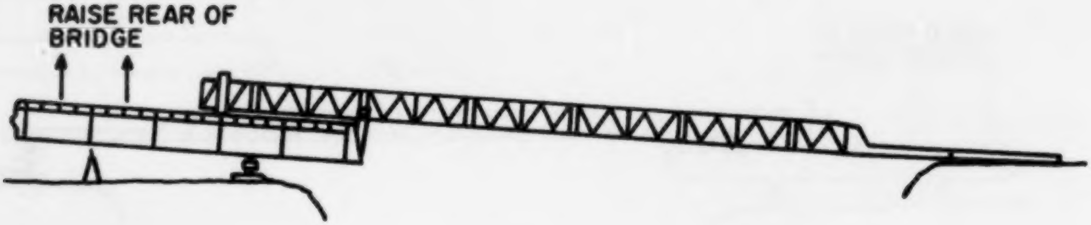
(c) Remove LRP from under launching nose, and remove the jack.

(d) Place jack and handle into the closed LRP.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

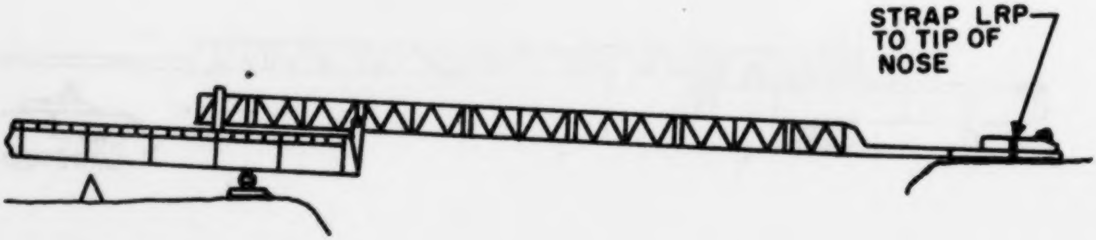
(e) Raise rear of bridge to put tip of light launching nose on far bank.



(f) Place LRP on top of light launching nose.

(g) Secure LRP to nose using a 5,000 lb cargo tie-down strap.

(h) Far bank crew returns to near bank.



(40) Boom bridge to panel point given below.

Bridge Length	Panel Point
9	1p2
10	2p0
11	1p4
12	2p1

For 9 bay bridge, PROCEED TO STEP 2.a. (48).

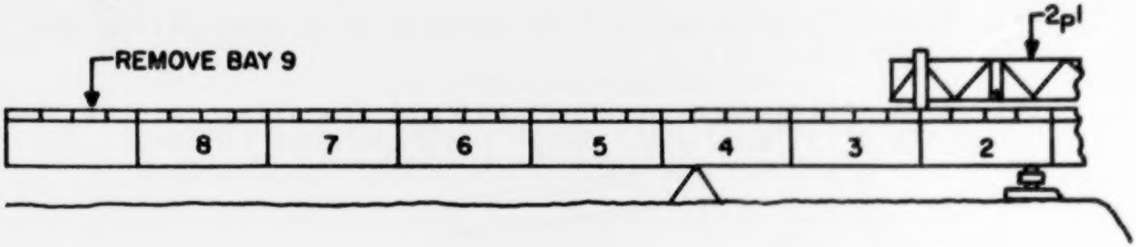
For 10 bay bridge, PROCEED TO STEP 2.a. (43).

For 11 bay bridge, PROCEED TO STEP 2.a. (45).

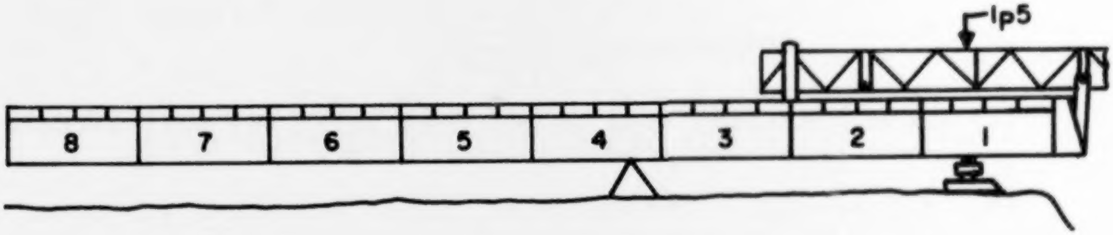
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

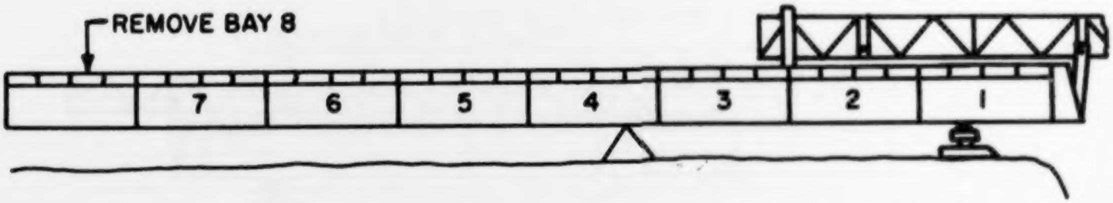
(41) Remove bay 9 top panel.



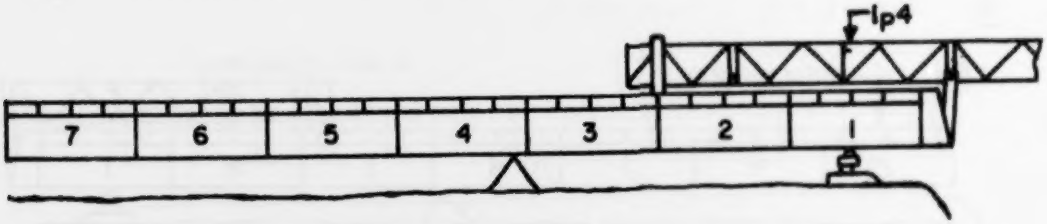
(42) Boom bridge to panel point 1p5.



(43) Remove bay 8 top panel.



(44) Boom bridge to panel point 1p4.



For 10 bay bridge, PROCEED TO STEP 2.a. (46) .

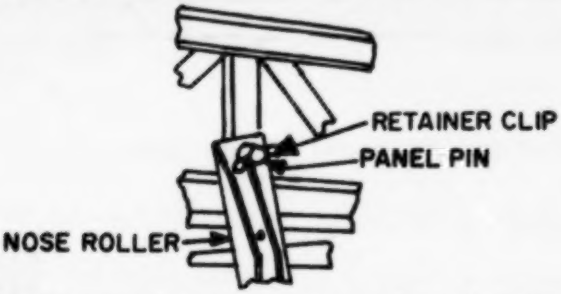
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

㊺ Remove sixth nose section (6N1).

(a) Remove retainer clip from panel pin in nose roller and anchorage tube.

(b) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.



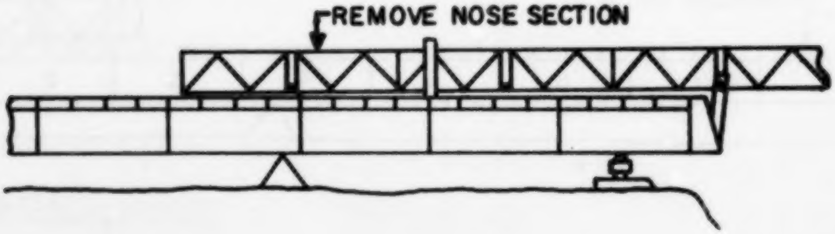
(c) Move launching nose to the rear until the next anchorage tube is slightly behind nose roller.

(d) Put panel pin through nose roller and anchorage tube.

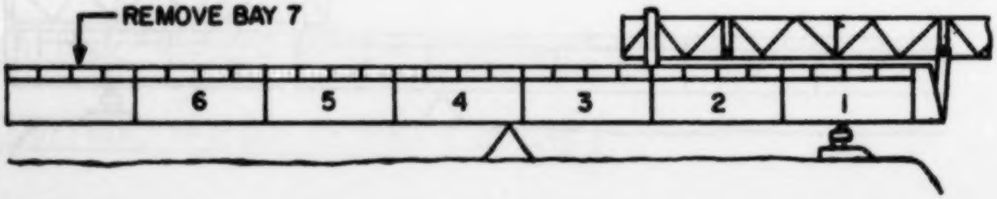
(e) Remove retainer clip and nose pin from last nose sections.

(f) Unlock shoot bolts in last nose section.

(g) Remove last nose section.



㊻ Remove bay 7 top panel.

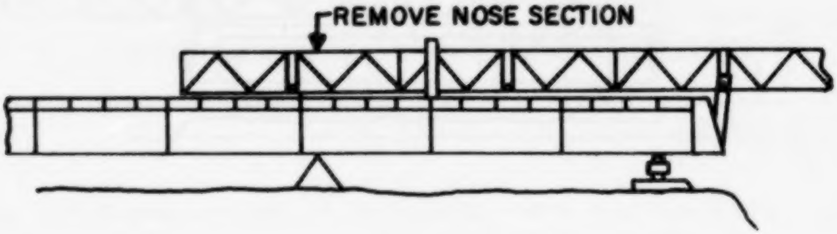


2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

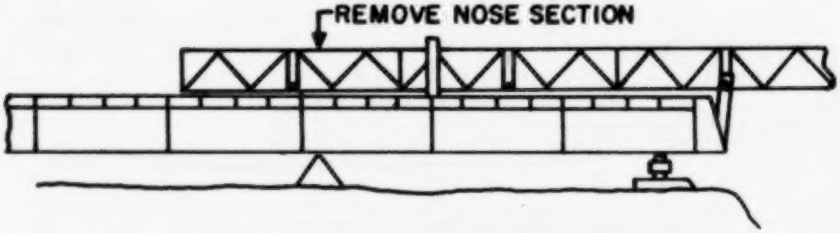
Step 2.a. (Cont).

㊼ Boom bridge to panel point 1p2.

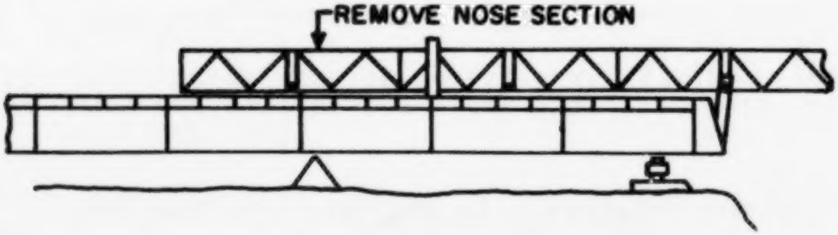
㊽ Remove fifth nose section (5N1).



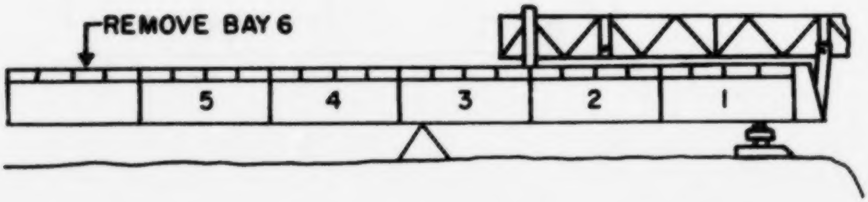
㊾ Remove fourth nose section (4N1).



㊿ Remove third nose section (3N1).



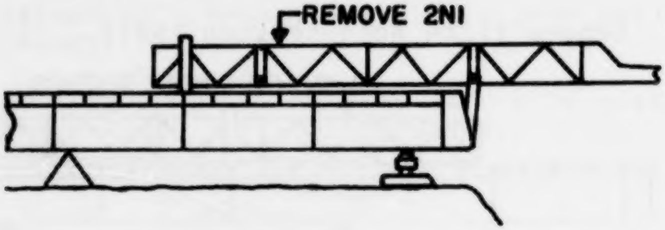
(51) Remove bay 6 top panel.



2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

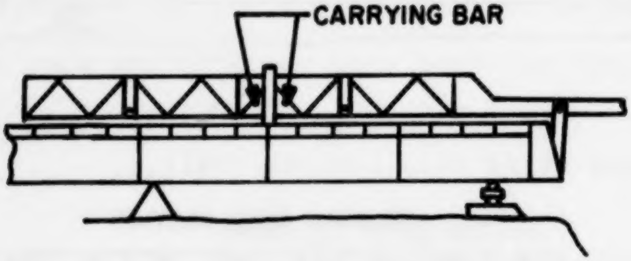
Step 2.a. (Cont).

(52) Remove second nose section (2N1).



(a) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.

(b) Move launching nose to rear until the rear vertical of nose section (1N1) has passed the rollers in the LNCG. Put a carrying bar through the nose section. If tip of nose is uphill place bar in front of rollers, if tip is downhill, place bar behind rollers.



(c) Remove retainer clip and nose pin from 2N1.

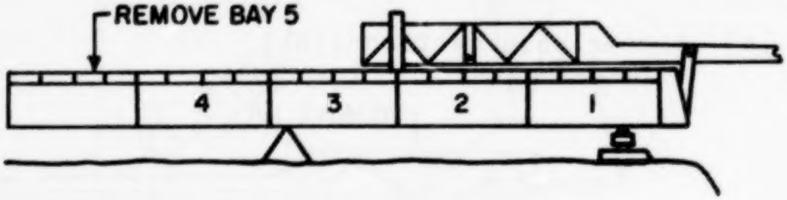
(d) Unlock shoot bolts in 2N1.

(e) Remove nose section (2N1).

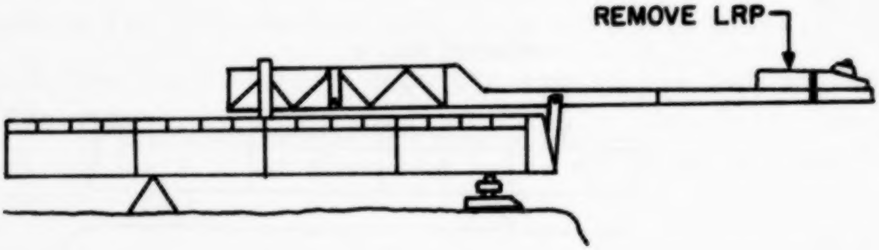
2-20. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(53) Remove bay 5 top panel.

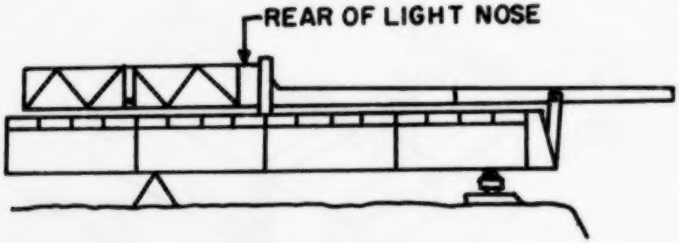


(54) Remove LRP from tip of launching nose.



(55) Remove first nose section (1N1).

(a) Move launching nose toward rear of site. Stop movement when the rear of the light launching nose rear section is over the LNCG.



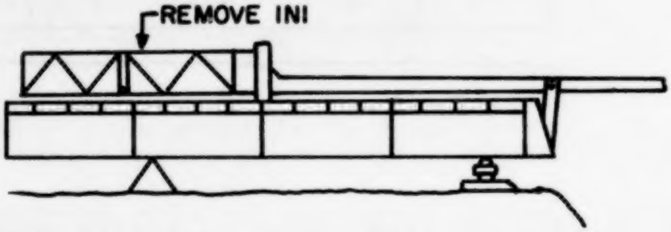
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

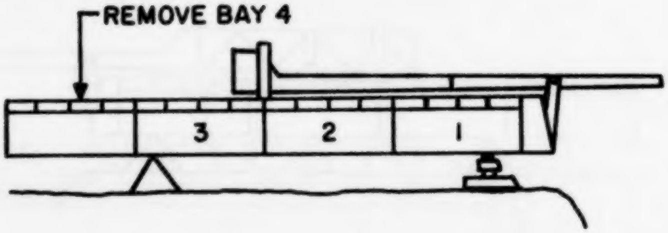
(b) Remove retainer clip and nose pin from nose secton (1N1).

(c) Unlock shoot bolts in 1N1.

(d) Remove nose section (1N1).



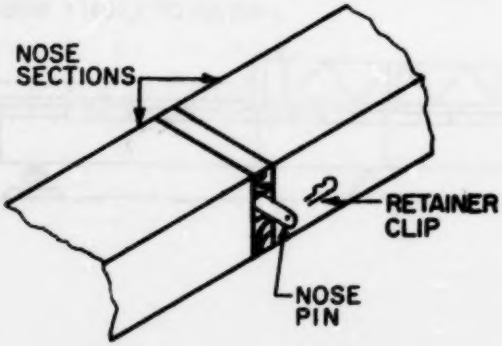
(56) Remove bay 4 top panel.



(57) Remove light launching nose from nose roller and LNCG. Disassemble light launching nose on the ground behind LNCG.

(a) Remove retainer clip and nose pin between nose sections.

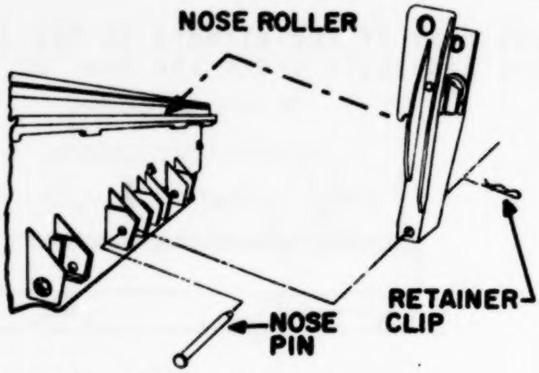
(b) Disengage nose sections from each other.



(58) Remove nose roller from the BSB.

2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).



(59) Remove LNCG and posts.

(a) Remove retainer clips from captive pins in the LNCG and posts.

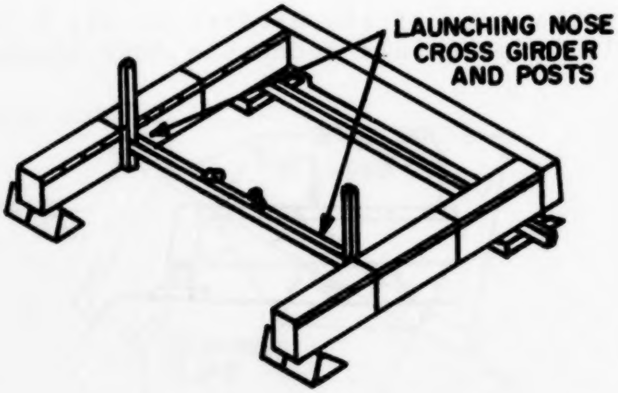
(b) Remove the top captive pins from LNCG and posts.

(c) Lift the LNCG at both ends and remove the bottom captive pin.

(d) Let the LNCG slide down the posts until it is free. Remove LNCG.

(e) Remove retainer clip from headless pin in the bottom of the LNCG posts.

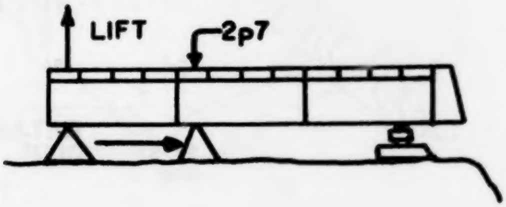
(f) Remove the posts from the headless pins and lug on the top panels.



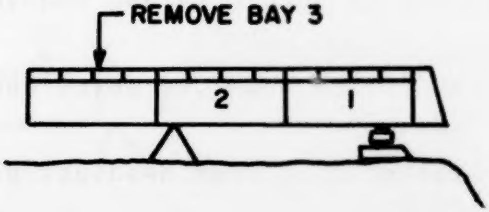
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).

(60) Lift the rear of the girders at bay 3 and reposition the building pedestals under the rear of bay 2 (at panel point 2p7).

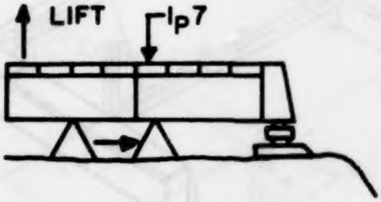


(61) Remove bay 3 top panel.



(62) Boom bridge until BSB is centered over the roller beam.

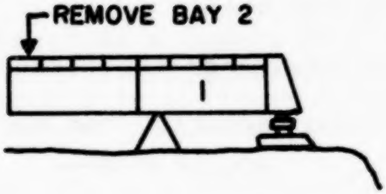
(63) Lift the rear of the girders at bay 2 and reposition the building pedestals under the rear of bay 1 (at panel point 1p7).



(64) Remove bay 2 top panel.

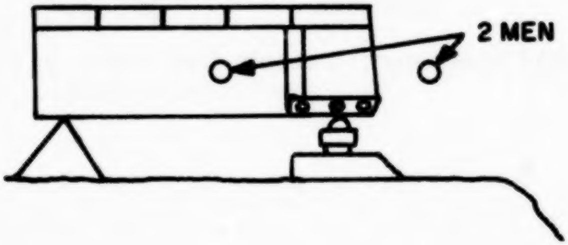
2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

Step 2.a. (Cont).



(65) To remove bay 1 top panels.

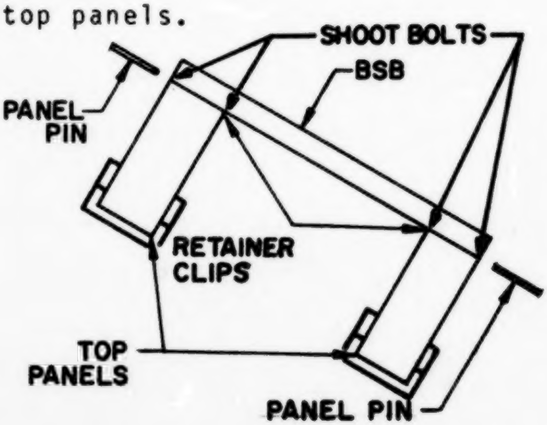
(a) Using at least 2 men, steady BSB on top of roller beam.



(b) Remove retainer clip and panel pins connecting top panel to BSB.

(c) Unlock shoot bolts.

(d) Remove top panels.



2-21. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Normal Site) (Cont).

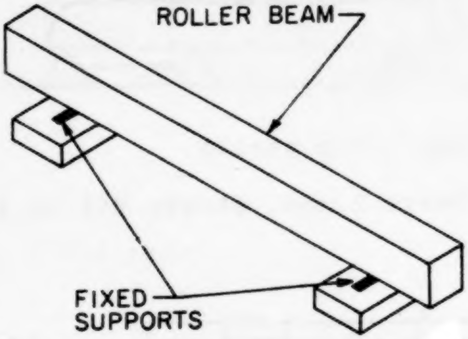
Step 2.a. (Cont).

(66) Remove BSB from RB.

(67) Disassemble roller beam.

(a) Remove roller beam from the fixed supports.

(b) Remove the fixed supports from the baseplates.



(68) Remove all components from the site.

2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site).

This section will describe the procedures for construction of 9 through 12 bay single story bridges on restricted sites. A site is considered restricted when the R distance (construction space) is less than given in Table 2-3.

This section will describe assembly of a bridge on a site that has the minimum [27 ft (8.3 m)] construction space on both banks. This is made possible by using launching noses longer than normal, and through the use of counterweights.

Since the procedures are very similar, only the steps that are different will be detailed. By using steps in paragraph 2-20, and the steps in this paragraph the user can construct any of the bridges (9 through 12 bay).

Once the user becomes familiar with the step by step procedures of construction, it will be possible to construct any link reinforced bridge by using the Building and Booming Table.

This table provides the necessary instructions to construct, boom and launch all bridges.

DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

TABLE 2-29. Building and Boom Table - 9 thru 12 Bay Single Story (Restricted Site)

Bridge Ft Length m	56 17.1	62 18.9	68 20.7	74 22.6
No. of Bays	9	10	11	12
Nose Construction	6N1	6N1	7N1	7N1
Build and Boom	Notes a thru h	Notes a thru h	Notes a thru h	Notes a thru h
ADD	4 and BSB*	4 and BSB*	4 and BSB*	4 and BSB*
ADD	1N1, 2N1 and 3N1	1N1, 2N1 and 3N1	1N1, 2N1 and 3N1	1N1, 2N1 and 3N1
ADD	2TP4D**	2TP4D**	4TP4D**	4TP4D**
ADD	4N1, 5N1 and 6N1	4N1, 5N1 and 6N1	4N1, 5N1, 6N1 and 7N1	4N1, 5N1, 6N1 and 7N1
Position	LRP	LRP	LRP	LRP
REMOVE	2TP4D	2TP4D	4TP4D	4TP4D
Boom To and REMOVE	2p7 LLN (F)		2p7 LLN (F)	
Boom To and REMOVE	4p7 LLN (R)	4p7 LLN	4p7 LLN (R)	4p7 LLN
REMOVE	BSB Note i	BSB Note i	BSB Note i	BSB Note i
ADD	5, 6, 7, and 8	5, 6, 7, and 8	5, 6, 7, and 8	5, 6, 7, and 8
Boom To and REMOVE	6p7 1N1 and 2N1	6p7 1N1	6p7 1N1	6p7 1N1
Boom To and REMOVE	8p7 3N1	8p7 2N1	8p7 2N1 and 3N1	8p7 2N1
ADD	9	9 and 10	9, 10, and 11	9, 10, 11 and 12
Boom To and REMOVE	9p7	10p7 3N1	10p7 4N1	10p7 3N1
Boom To and REMOVE			11p7	12p7 4N1
ADD	BSB	BSB	BSB	BSB
Boom To and REMOVE	BSB Note j	BSB Note j	BSB Note j	BSB Note j
Complete By:	Note k	Note k	Note k	Note k

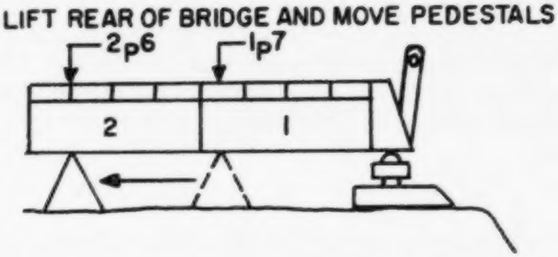
Notes:
a. Build Bay 1.
b. Position BP under 1p7 as Bay 1 is added.
c. Build Bay 2.
d. Position BP under 2p6 as Bay 2 is added.
e. Boom to 1p0.
f. Build Bay 3.
g. Position BP under 3p7 as Bay 3 is added.
h. Add LLN.
i. Place BSB to side of site near rear of bridge.
j. Lower LRP, remove last 3 LNH.
k. Put bridge on ground.
* = Used as counterweight. Secure to girders with SHOOT BOLTS ONLY.
** = Counterweight components.

2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

For Single Story - 9 thru 12 Bay Bridges, refer to paragraph 2-20:

Perform Steps 1.a.① through 2.a.⑤ of paragraph 2-20, then proceed to ⑥ below.

⑥ Lift girders and move pedestals under the rear of Bay 2 (to panel point 2p6). Bay 2 has been built.

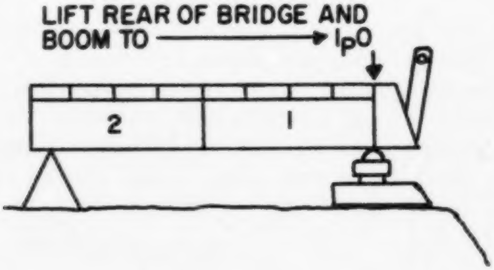


⑦ Boom bridge to panel point 1p0.

(a) Unlock rollers.

(b) Lift girders and boom until panel pin connecting Bay 1 to BSB is centered over the RB.

(c) Stop boom, lock rollers.

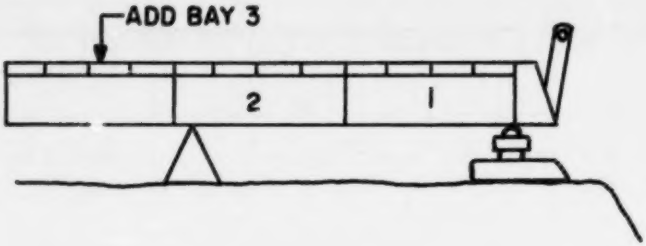


NOTE

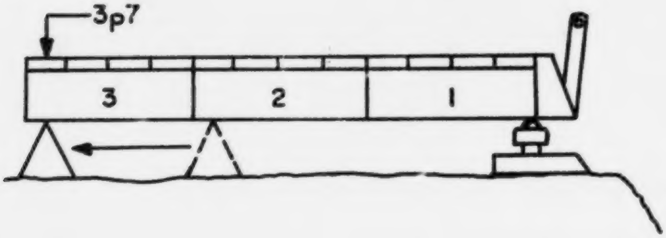
A headless panel pin is used at the junction of bays 2 and 3. This pin is required for the connection of the launching nose cross girder post to the top panels.

2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

⑧ Pin top panels of Bay 3 to the top panels of Bay 2.



⑨ Lift girders and move pedestals under the rear of Bay 3 (panel point 3p7). The building pedestals are now in their final position. No further movement of the pedestals is required.

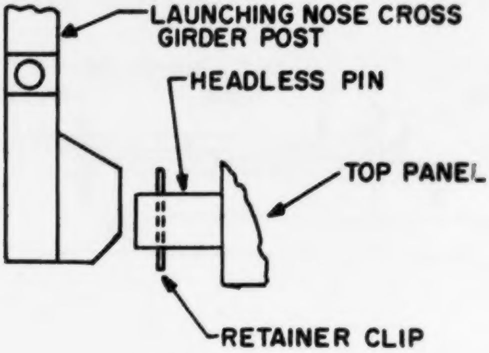


⑩ Fit nose cross girder post to headless pin at junction of bays 2 and 3.

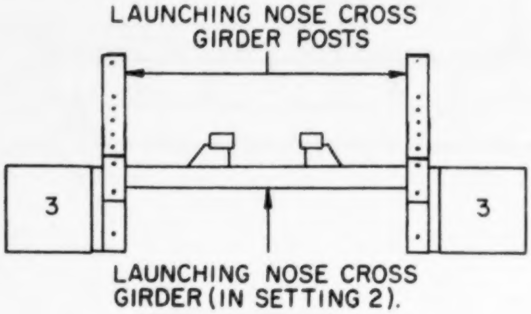
NOTE

Use headless panel pin to connect nose cross girder posts to panels. Place retainer clips through both ends of the pin (inside retainer clip is placed on the inside of nose cross girder post to keep nose cross girder post from slipping off headless pin, and to keep pin from working out of the hole). The launching nose must be constructed in the setting

2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).



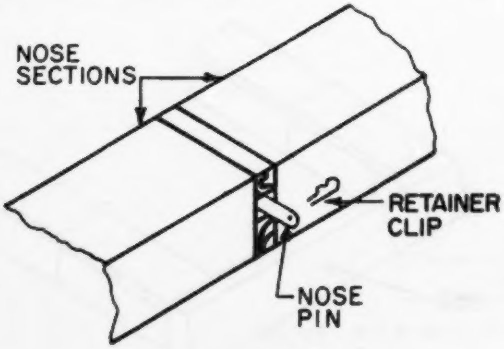
⑪ Pin nose cross girder to post at correct height and put retainer clip through the end of captive pins.


LAUNCHING NOSE CROSS GIRDER POSTS
3
3
LAUNCHING NOSE CROSS GIRDER (IN SETTING 2).

⑫ Pin front and rear sections of light nose together.

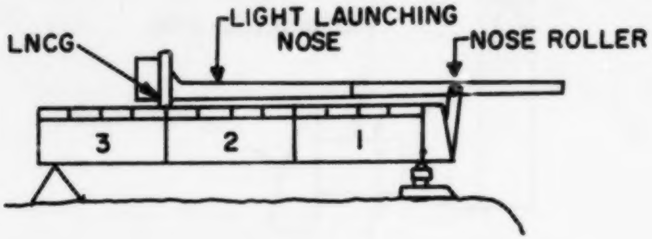
(a) Use nose pin to join the two sections together.

(b) Put retainer clip through the end of nose pin.

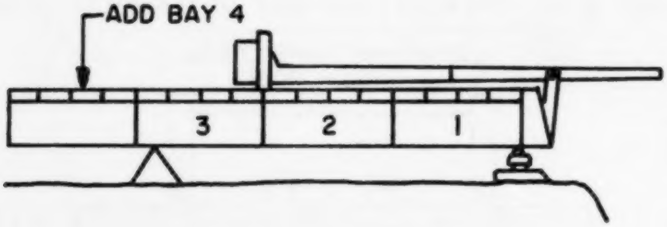


2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

⑬ Place front end of light nose section on nose roller and rear end on nose cross girder. Rear of nose section should extend about 2 ft (0.61 m) behind cross girder.

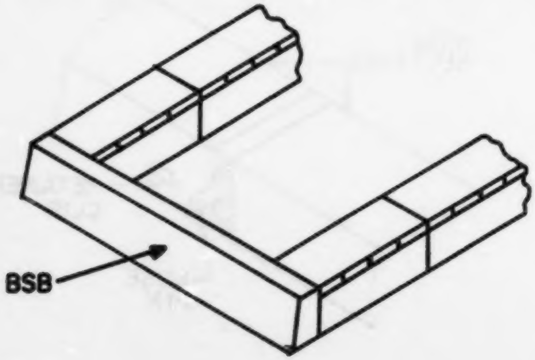


⑭ Pin top panels of bay 4 to top panels of bay 3.



NOTE

Connection of the rear BSB to top panels is required at this point. It is part of the counterweight used for construction of the longer launching nose used on bridges built on restricted sites.



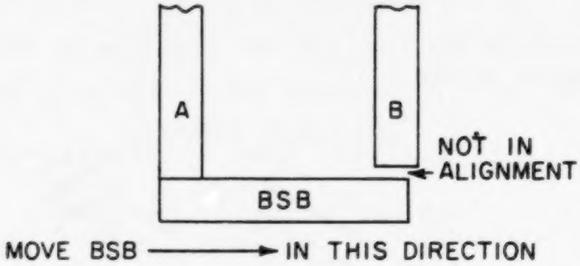
2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

⑮ Connect BSB to top panels.

(a) Unlock roller beam roller under girder B so that it can move over the roller.

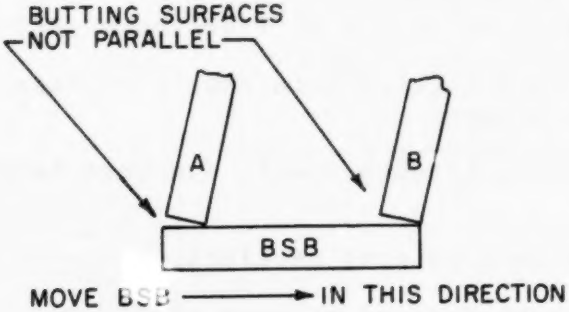
(b) Engage dowels and sockets of bankseat beam and top panel of girder A. DO NOT CLOSE SHOOT BOLTS.

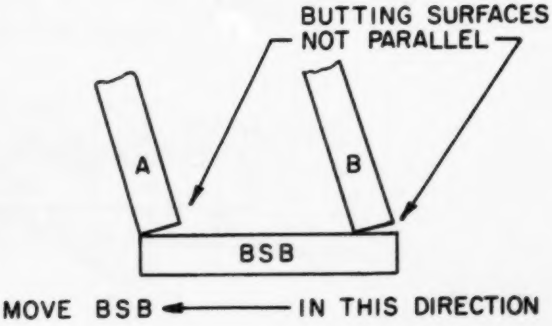
(c) Move BSB sideways, if necessary, to engage dowels and sockets of the BSB and top panel of girder B.



(d) Move BSB sideways in appropriate direction to make the gaps between the butting surfaces parallel.

(e) Move bankseat beam up and down at the end of girder B until all shoot bolts can be closed.





2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 Bay (Restricted Site) (Cont).

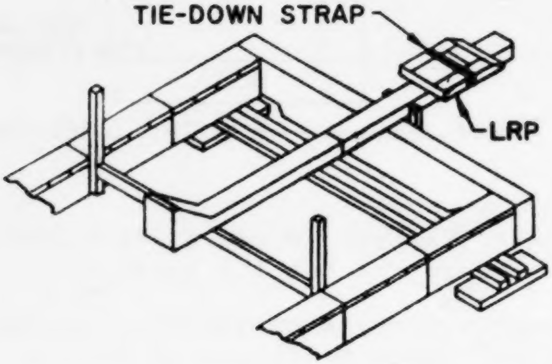
NOTE

A 5,000 lb cargo tie-down strap is placed around the pedestal and nose to keep it secured to the nose.

⑯ Place landing roller pedestal (LRP) and landing roller on the tip of the light nose.

(a) Place one 15 ton jack (ram fully extended) in LRP.

(b) Secure LRP to the tip of light nose with the cargo tie-down strap.



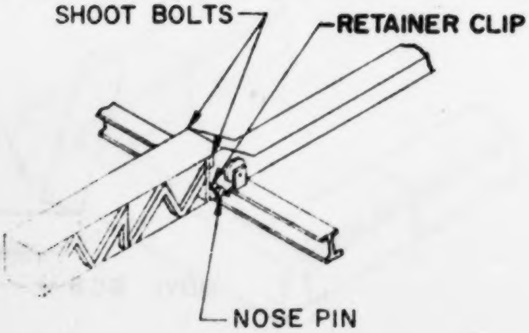
⑰ Pin first heavy nose section to end of light nose sections.

(a) Fit sockets of heavy nose section onto dowels of nose section on nose cross girder.

(b) Lift and push shoot bolts through dowels and turn handles to locked position.

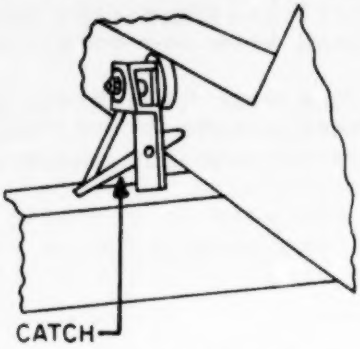
(c) Push nose pin through jaws of nose sections.

(d) Put retainer clip through the end of nose pin.



2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 Bay (Restricted Site) (Cont).

⑱ Raise gravity catch handle on nose cross girder.



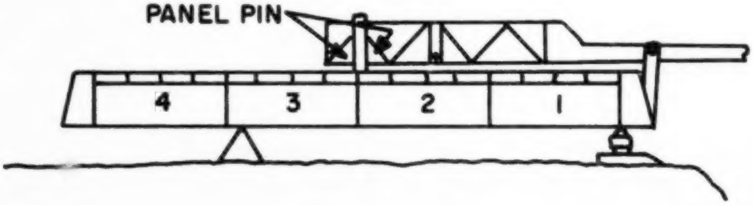
⑲ Push nose forward 10 ft (3.0 m).

(a) Align the launching nose over the cross girder as shown.

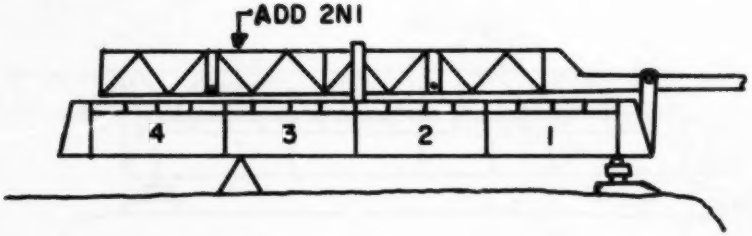
(b) Place a panel pin through nose section either in front of or behind cross girder rollers (depends on slope of nose).

If the tip of the nose is uphill, place the panel pin in front of the cross girder rollers.

If the tip of the nose is downhill, place the panel pin in front of the cross girder rollers.



⑳ Pin second heavy nose section to first heavy nose section.

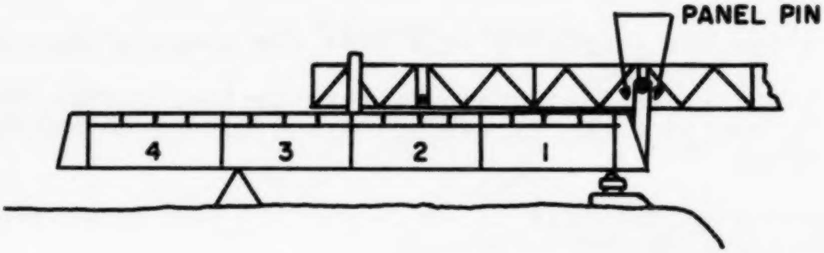


2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

㉑ Lift the gravity catch, remove the panel pin and push the nose forward until the anchorage tube in the first nose section is aligned with the holes in the nose roller.

(a) If the tip of the nose is uphill, move the nose forward until the anchorage tube is in front of the nose roller. Put a panel pin through the anchorage tube.

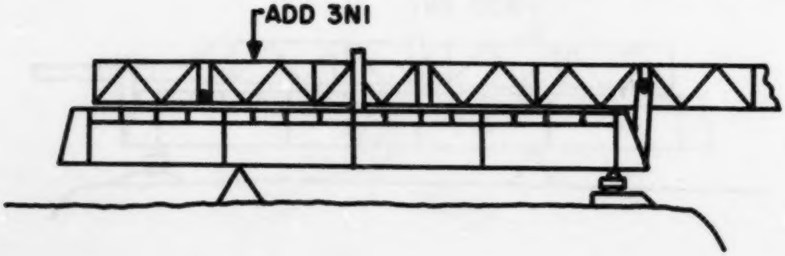
(b) If the tip of the nose is downhill move the nose to the rear until the anchorage tube is to the rear of the nose roller. Put a panel pin through the anchorage tube.



㉒ Pin third nose section in place.

NOTE

Remove the panel pin in the anchorage tube and move the nose forward the length of 1 nose unit [10 ft (3.7 m)]. Put pin back through anchorage tube as each nose section is added. Do not remove this pin until another nose section is attached and the nose crew has "hands on" the nose to prevent it from rolling.



2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

NOTE

Counterweight top panels, deck units and the BSB are required for the construction of the longer launching noses used in the construction of 9 through 12 bay bridges on restricted sites. DO NOT try to construct the nose without counterweight.

Counterweight

Bridge Length	Counterweight
9 and 10 bay	2 Top Panels,.4 Deck Units, and BSB (2TP4D)
11 and 12 bay	4 Top Panels, 4 Deck Units, and BSB (4TP4D)

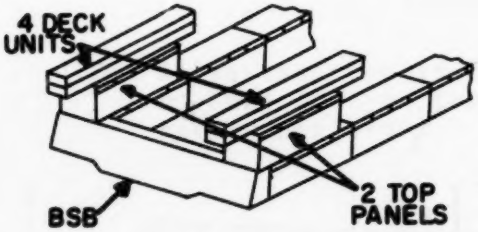
WARNING

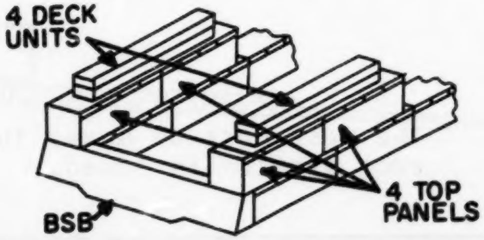
DO NOT try to construct the nose without counterweight. Injury to personnel and damage to equipment will occur, if counterweights are not used.

㉓ Position the required counterweight on the rear of the bridge.

(a) Ensure that the counterweights are as far to the rear of the bridge as is possible.

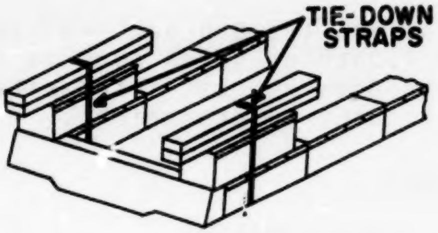
(b) Stack the counterweights as shown to provide space for the addition of the remaining nose sections.

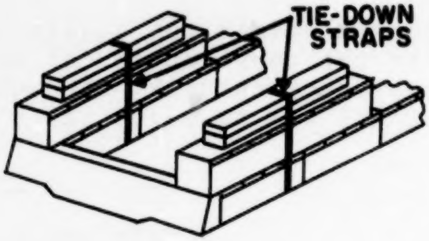




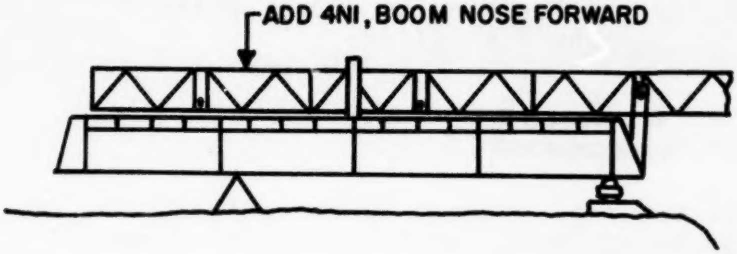
2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

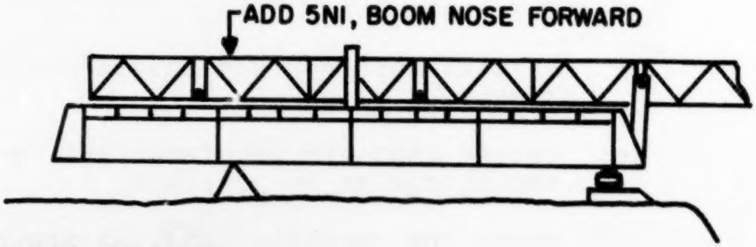
(c) Secure the counterweights to the bridge girders with 2 (two) 5,000 lb cargo tie-down straps.

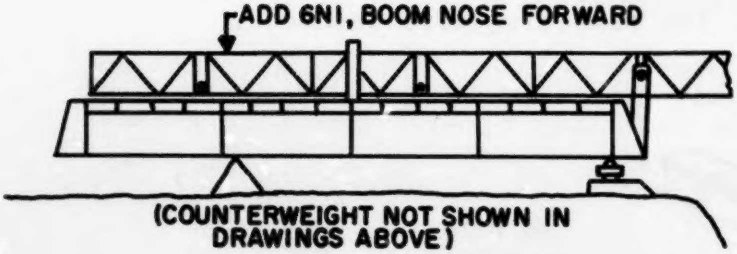




㉔ Pin fourth, fifth, and sixth nose sections in place.







(COUNTERWEIGHT NOT SHOWN IN DRAWINGS ABOVE)

NOTE

The nose must be moved forward the length of 1 nose section as each section is added.

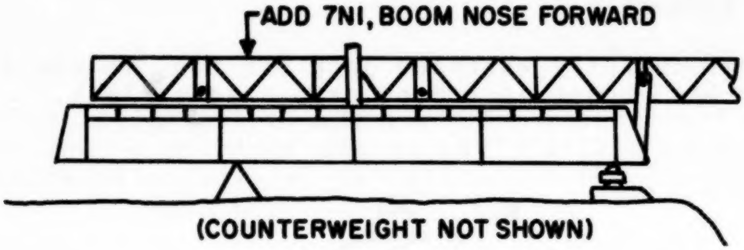
For 9 and 10 bay bridges, PROCEED TO STEP ㉖.

2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

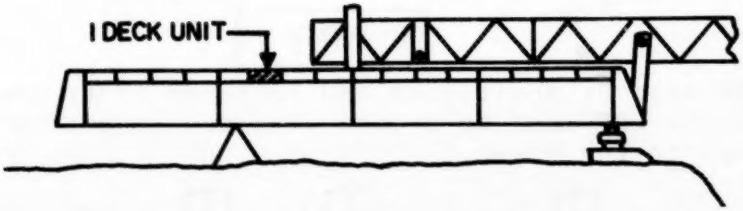
㉕ Pin seventh nose section in place.

(a) Align the anchorage tube of the nose section with the holes in the nose roller.

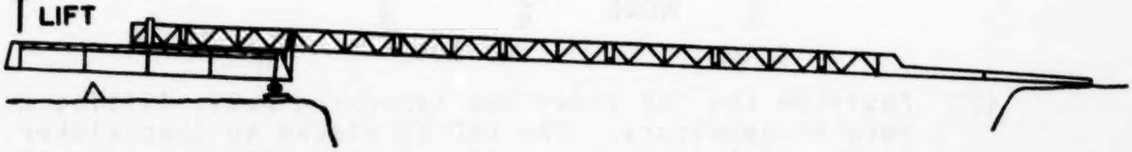
(b) Put a panel pin through the nose roller and anchorage tube, secure with a retainer clip.



㉖ Place one deck unit in the next to last deck recess of bay 3.



㉗ Raise the rear of the bridge by hand until the nose touches down on the far bank. Hold the bridge in this raised position.



2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

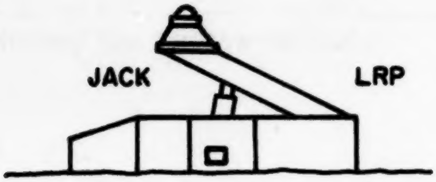
㉘ Six personnel cross to the far bank to set up the landing roller pedestal (LRP) and to disassemble the launching nose.

㉙ Set up the LRP.

(a) Remove the 5,000 lb cargo tie-down strap.

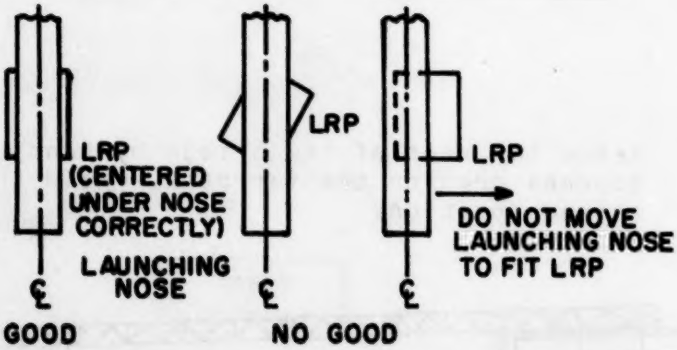
(b) Remove LRP from tip of launching nose. As LRP is removed, the rear of bridge is lowered back onto the building pedestals.

(c) Place fully extended jack (15 ton) in the base of the LRP. Lower jack hood onto head of jack.



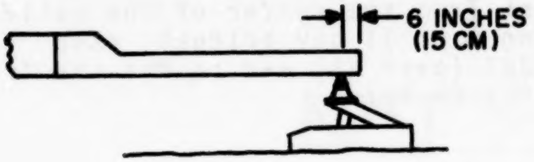
NOTE

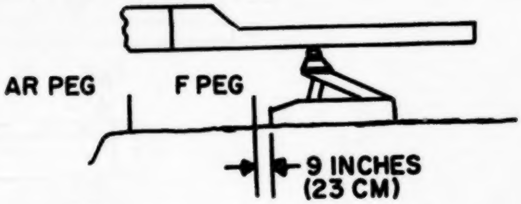
The LRP must be positioned and centered under the launching nose. The LRP must be placed with the long side of its base parallel to the nose.


LRP (CENTERED UNDER NOSE CORRECTLY)
LAUNCHING NOSE
℄
GOOD
LRP
℄
LRP
DO NOT MOVE LAUNCHING NOSE TO FIT LRP
℄
NO GOOD

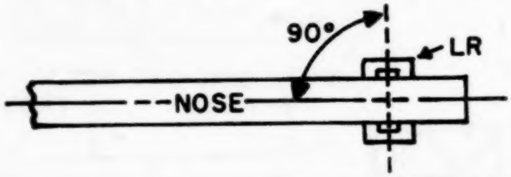
(d) Position the LRP under the launching nose, lifting the nose if necessary. The LRP is placed so that either the center of the landing roller is 6 in (15 cm) from the tip of nose OR the edge of LRP is 9 in (23 cm) from the F peg.

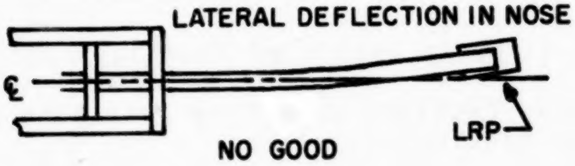
2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).





(e) Check placement of the LRP to . Ensure that the landing roller is at right angles (90°) to the nose, and that there is no lateral deflection in the launching nose.





㉚ Remove counterweight deck and top panels to allow the launching nose to set down onto the LRP.

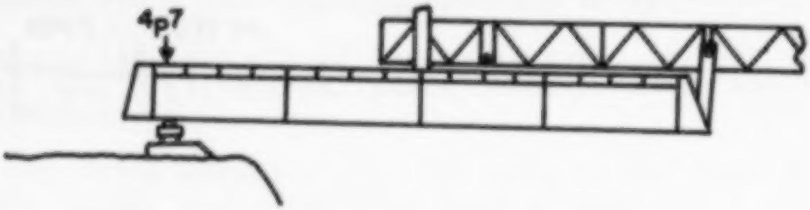
(a) Far bank crew guides the nose onto the LRP.

(b) DO NOT remove the BSB.

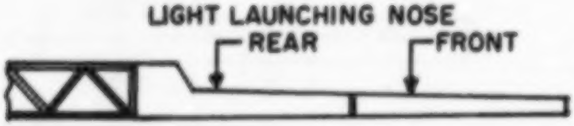
(c) Remove the building pedestals.

2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

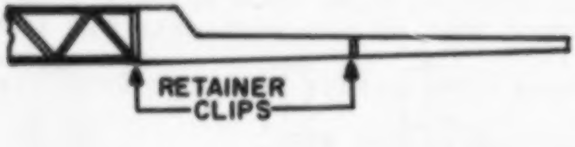
㉛ Unlock rollers and launch until the end of the last top panels are 1 panel point from the center of the roller beam. When constructing 9 or 11 bay bridges, stop launch temporarily at 2p7 (over RB) and remove the front LLN, then continue launch to 4p7.



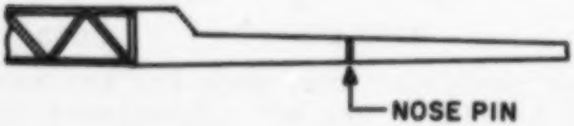
㉜ Remove both sections of the light launching nose.



(a) Remove retainer clip from both nose pins in the light nose sections.

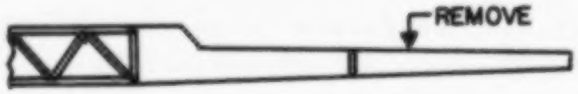


(b) Remove nose pin between the two light nose sections.

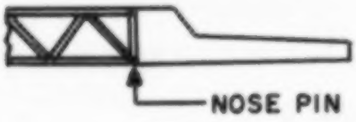


2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

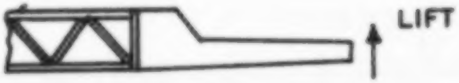
(c) Remove light nose front.



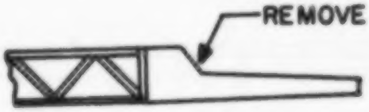
(d) Remove nose pin from the rear of light launching nose rear section.



(e) Light nose rear must be lifted slightly to allow unlocking of the shoot bolts.



(f) Remove light launching nose rear.



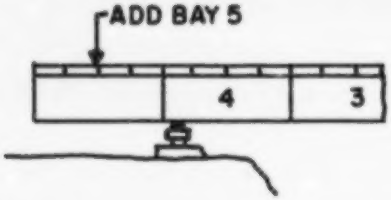
2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

㉝ Remove BSB temporarily.

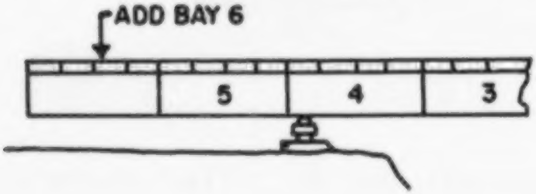
(a) With six personnel lifting BSB, unlock shoot bolts.

(b) Remove BSB, and place it on the ground to one side of the site, near the rear of the bridge.

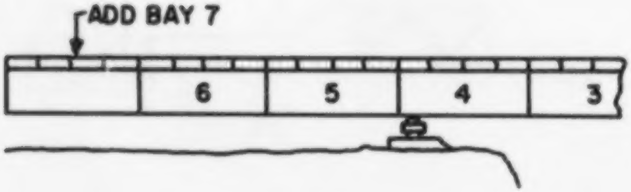
㉞ Pin top panels of Bay 5 to the top panels of Bay 4.



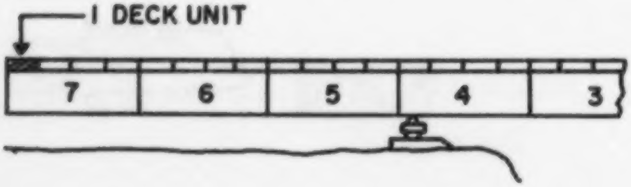
㉟ Pin top panels of Bay 6 to the top panels of Bay 5.



㊱ Pin top panels of Bay 7 to the top panels of Bay 6.

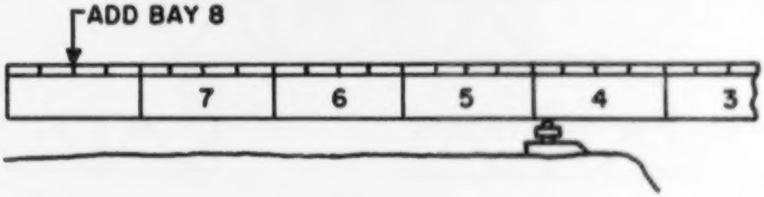


㊲ Place one deck unit in the last deck unit recess of Bay 7.



2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(38) Pin top panels of Bay 8 to the top panels of Bay 7. For a 9 bay bridge, use a headless pin to pin bay 8 to bay 7.

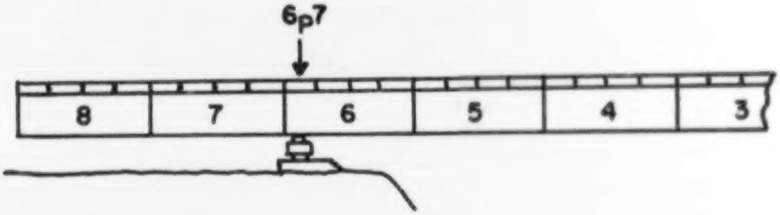


(39) Boom bridge to panel point 6p7.

(a) Unlock rollers.

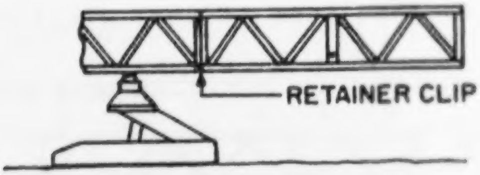
(b) Boom until panel point 6p7 is over the roller beam.

(c) Stop boom, lock rollers.

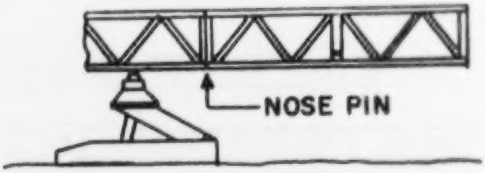


(40) Remove first section of the launching nose heavy (1N1).

(a) Remove the retainer clip from the nose pin.



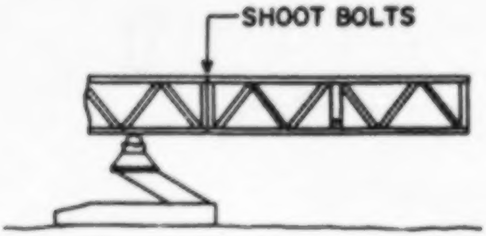
(b) Remove the nose pin connecting the two sections.

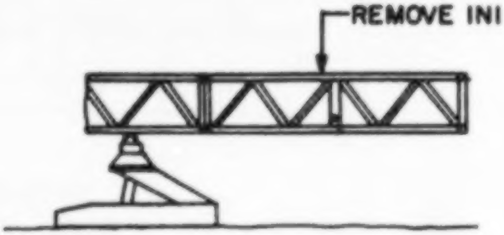


2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(c) Lift the front of the nose section and unlock the shoot bolts.

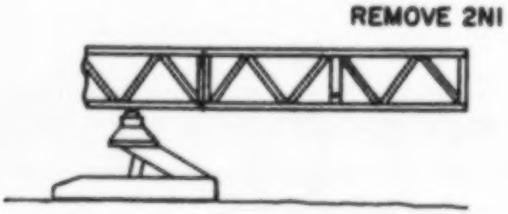
(d) Remove the nose section.





For 10 through 12 bay bridges, PROCEED TO STEP ㊷.

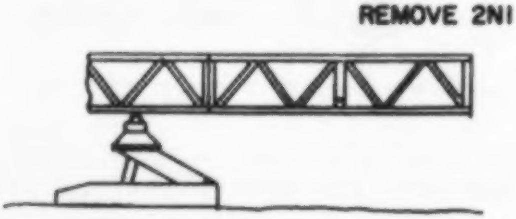
㊶ Remove second section of the launching nose heavy (2N1).



㊷ Boom bridge to panel point 8p7.

For 9 bay bridge, PROCEED TO STEP ㊹.

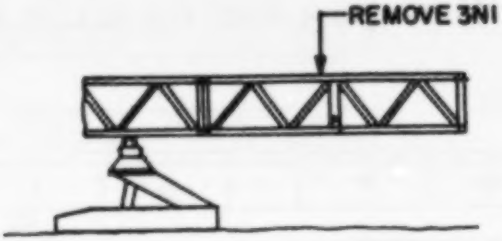
㊸ Remove second section of the launching nose heavy (2N1).



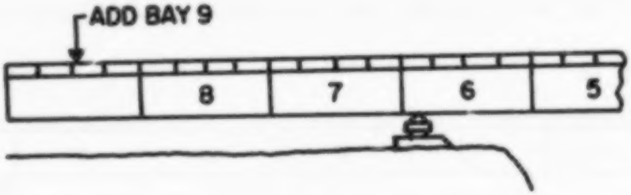
For 10 and 12 bay bridges, PROCEED TO STEP ㊺.

㊹ Remove third section of the launching nose heavy (3N1).

2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

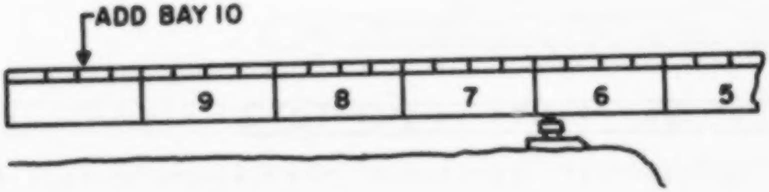


㊺ Pin top panels of Bay 9 to the top panels of Bay 8. For a 10 bay bridge, use a headless pin to pin bay 9 to bay 8.



For 9 bay bridge, PROCEED TO STEP (49).

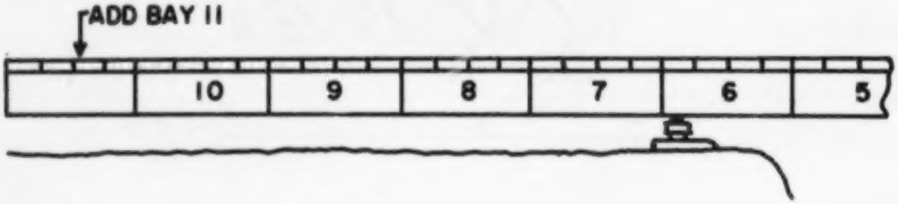
㊻ Pin top panels of Bay 10 to the top panels of Bay 9. For a 11 bay bridge, use a headless pin to pin bay 10 to bay 9.



For 10 bay bridge, PROCEED TO STEP (49).

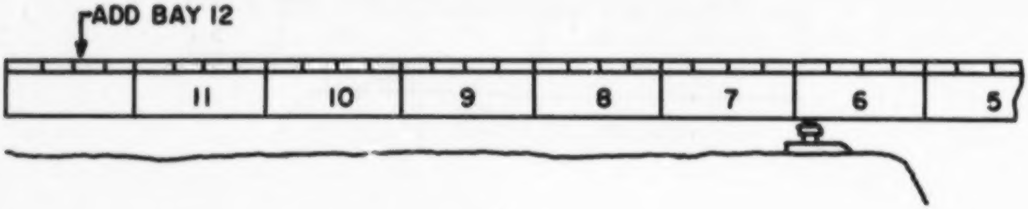
2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(47) Pin top panels of Bay 11 to the top panels of Bay 10. For a 12 bay bridge, use a headless pin to pin bay 11 to bay 10.



For 11 bay bridge, PROCEED TO STEP (49).

(48) Pin top panels of Bay 12 to the top panels of Bay 11.



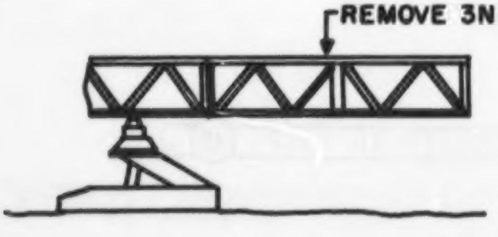
(49) Boom to panel point given below for bridge being constructed.

Bridge Length	Panel Point
9	9p7
10 through 12	10p7

For 9 bay bridge, PROCEED TO STEP (54).

For 11 bay bridge, PROCEED TO STEP (51).

(50) Remove third section of the launching nose heavy (3N1).

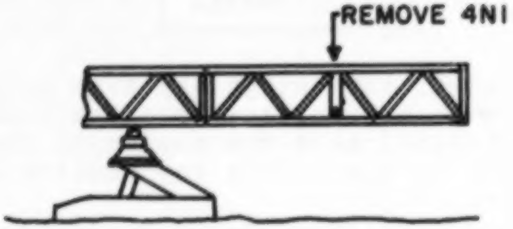


2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

For 10 bay bridge, PROCEED TO STEP (54).

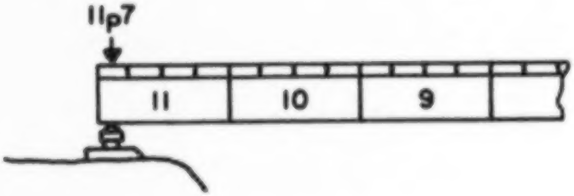
For 12 bay bridge, PROCEED TO STEP (52).

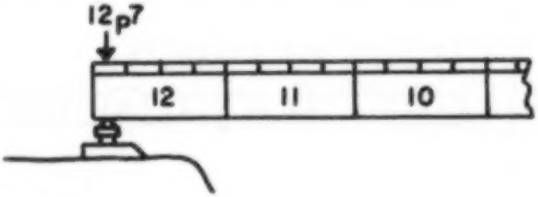
(51) Remove fourth section of the launching nose heavy (4N1).



(52) Boom to panel point given below for bridge being constructed.

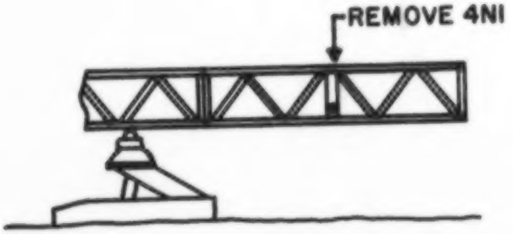
Bridge Length	Panel Point
11	11p7
12	12p7





For 11 bay bridge, PROCEED TO STEP (54).

(53) Remove fourth section of the launching nose heavy.



2-22. ASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

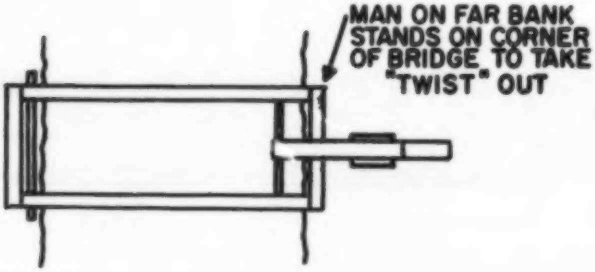
(54) Refit BSB to end of bridge.

(a) Engage dowels and sockets of BSB and top panels, close shoot bolts.

(b) Put panel pin through BSB and top panel.

NOTE

Due to uneven banks, the bridge may have a "twist" in it which will make insertion of the panel pins very difficult. To overcome this "twist", have the person on the far bank stand on the corner of the bridge. This may require a second person if "twist" is severe.


MAN ON FAR BANK STANDS ON CORNER OF BRIDGE TO TAKE "TWIST" OUT

(c) Put retainer clip through the end of the panel pin.

To complete assembly:

Perform Steps 2.a. (61) thru (85) in paragraph 2-20.

2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site)

This paragraph will describe the procedures for disassembly of 9 through 12 bay single story bridges on restricted sites. A site is considered restricted when the R distance (construction space) is less than given in Table 2-3.

This paragraph will describe disassembly of a bridge on a site that has the minimum [27 ft (8.3 m)] construction space on both banks. This is made possible by using launching noses longer than normal, and through the use of counterweights.

Since the procedures are very similar, only the steps that are different will be detailed. By using steps in paragraph 2-21, the steps in this section, the user can disassemble any of the bridges (9 through 12 bay).

Once the user becomes familiar with the step by step procedures of construction, it will be possible to construct any link reinforced bridge by using the Building and Booming Table.

This table provides the necessary instructions to construct, boom and launch all bridges.

DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

TABLE 2-30. De-Launch Table - 9 thru 12 Bay Single Story (Restricted Site)

Bridge ft Length m	56 17.1	62 18.9	68 20.7	74 22.6
No. of Bays	9	10	11	12
Nose Construction	6N1	6N1	7N1	7N1
Build	Notes a thru c	Notes a thru c	Notes a thru c	Notes a thru c
Boom To and REMOVE	9p7 BSB Note d	10p7 BSB Note d	11p7 BSB Note d	12p7 BSB Note d
Boom To and ADD			9p7 3N1	10p7 3N1
Boom To and ADD	8p7	8p7 2N1	8p7 2N1	8p7 2N1
REMOVE	9	10 and 9	11, 10, and 9	12, 11, 10, and 9
Boom To and ADD	6p7 1N1	6p7 1N1	6p7 1N1	6p7 1N1
Boom To and ADD	4p7 LLN (R)	4p7 LLN (R)	4p7 LLN (R)	4p7 LLN (R)
REMOVE	8, 7, 6, and 5	8, 7, 6, and 5	8, 7, 6, and 5	8, 7, 6, and 5
ADD	BSB *	BSB *	BSB *	BSB *
Boom To and ADD	2p7 LLN (F)	2p7 LLN (F)	2p7 LLN (F)	2p7 LLN (F)
Boom To and ADD	1p0 Note e	1p0 Note e	1p0 Note e	1p0 Note e
ADD	2TP4D**	2TP4D**	4TP4D**	4TP4D**
RECOVER	LRP	LRP	LRP	LRP
REMOVE	6N1, 5N1, and 4N1	6N1, 5N1, and 4N1	7N1, 6N1, 5N1, and 4N1	7N1, 6N1, 5N1, and 4N1
REMOVE	2TP4D	2TP4D	4TP4D	4TP4D
REMOVE	3N1, 2N1, and 1N1	3N1, 2N1, and 1N1	3N1, 2N1, and 1N1	3N1, 2N1, and 1N1
REMOVE	BSB and 4	BSB and 4	BSB and 4	BSB and 4
REMOVE	LLN	LLN	LLN	LLN
REMOVE	3, Note f	3, Note f	3, Note f	3, Note f
REMOVE	2 and 1	2 and 1	2 and 1	2 and 1
Complete By:	Note g Note h	Note g Note h	Note g Note h	Note g Note h

Notes:
- a. Position RB under RBSB.
- b. Position center of LR (in LRP) 9 ft (2.7 m) from BSB.
- c. Add 3 LNH, reposition LRP (base against BSB), add LNH 4.
- d. Place BSB to side of site near the end of bridge.
- e. Position BP 15 ft (4.6 m) behind RB.
- f. Position BP under 2p7 before removing Bay 3.
- g. Position BP under 1p7 before removing Bay 2.
- h. Remove BSB and clear site.

* = Used as counterweight, secured with shoot bolts only.
** = Counterweight components.

2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

For Single Story - 9 through 12 Bay Bridges, proceed to paragraph 2-21:

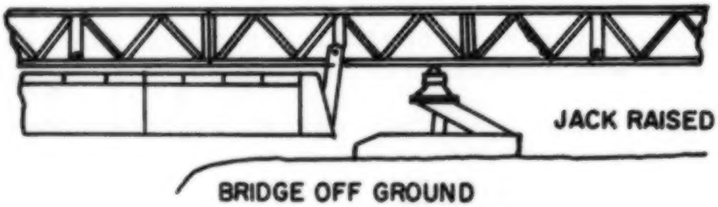
Perform Steps 1.a. 1 thru 2.a. ㉘

then proceed to ㉙ below.

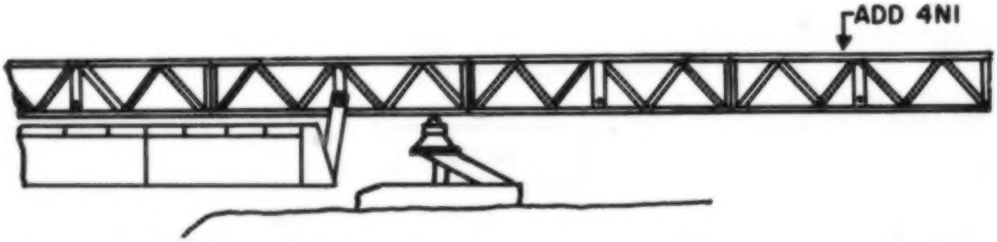
㉙ Using LRP, raise bridge from ground until jack is fully extended.

NOTE

Near bank end of bridge is on locked rollers of roller beam.



㉚ Connect and pin fourth heavy nose section to the third section. DO NOT REMOVE the panel pin in the anchorage tube of the second section.



㉛ De-launch bridge until panel point given below is over the roller beam.

Bridge Length	Panel Point
9	9p7
10	10p7
11	11p7
12	12p7

2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(a) Unlock rollers.

(b) De-launch bridge to panel point given.

(c) Stop de-launch, lock rollers.

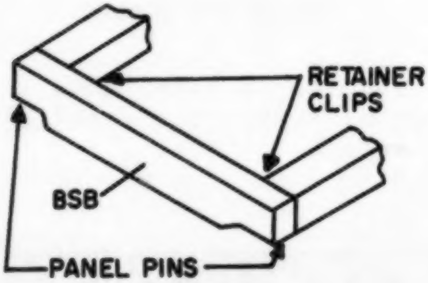
NOTE

The BSB is removed and placed to one side of the site near the rear of the bridge. It will be put back on later and used as a counterweight to permit retrieval and disassembly of the launching nose.

(32) Remove BSB.

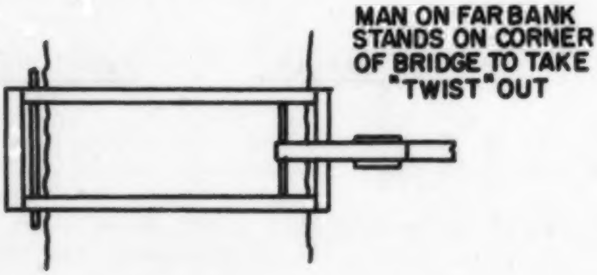
(a) Remove the retainer clip from the panel pin in the BSB and last top panel.

(b) Remove the panel pin connecting the BSB to last top panel.



NOTE

Due to uneven banks, the bridge may have a "twist" in it, which will make removal of panel pins very difficult. To overcome this "twist", have one man on the far bank stand on the corner of the bridge. This may require a second man if the " twist" is severe.


MAN ON FAR BANK STANDS ON CORNER OF BRIDGE TO TAKE "TWIST" OUT

2-23. DISASSSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(c) Unlock shoot bolts and remove the BSB.

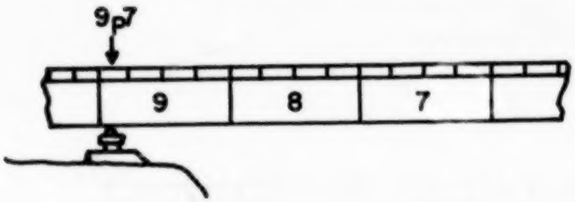
For 9 and 10 bay bridges, PROCEED TO STEP ㉟.

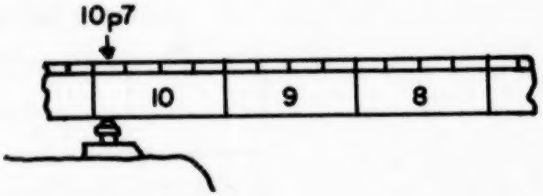
㉝ De-launch bridge until panel point given is over the roller beam.

Bridge Length	Panel Point
11	9p7
12	10p7

(a) Unlock rollers, de-launch bridge to panel point given.

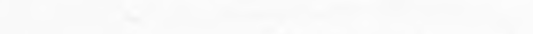
(b) Stop de-launch, lock rollers.





㉞ Connect and pin heavy nose sections to launching nose. For 11 and bay - pin 3N1 to launching nose.

㉟ De-launch bridge until panel point 8p7 is over roller beam.



For 9 bay bridge, PROCEED TO STEP ㊷.

2-23. DISASSSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

㊱ Connect and pin heavy nose section to launching nose. For 10 through 12 bay - pin 2N1 to launching nose.

For 10 bay bridge, PROCEED TO STEP ㊶.

For 11 bay bridge, PROCEED TO STEP ㊴.

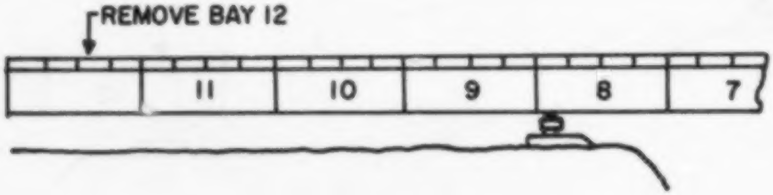
㊲ Remove bay 12 top panel.

(a) Remove retainer clip from panel pin connecting top panels.

(b) Remove panel pin connecting top panels.

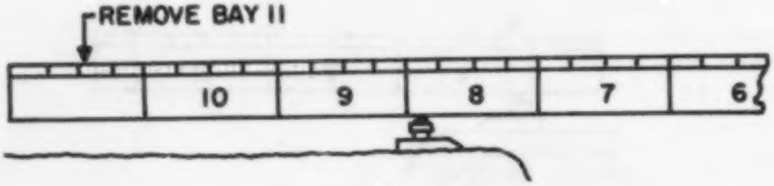
(c) Lift top panel and unlock shoot bolts.

(d) Remove top panel.



㊳ Remove deck unit from next to last deck unit recess of Bay 11 (for 12 bay bridge only).

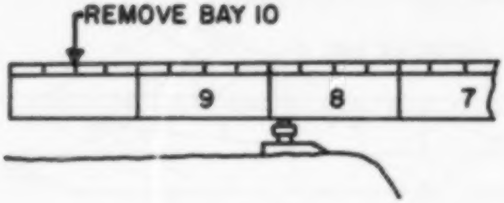
㊴ Remove bay 11 top panel.



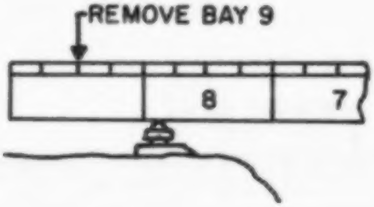
㊵ Remove deck unit from next to last deck unit recess of Bay 10 (for 11 bay bridge only).

㊶ Remove bay 10 top panel.

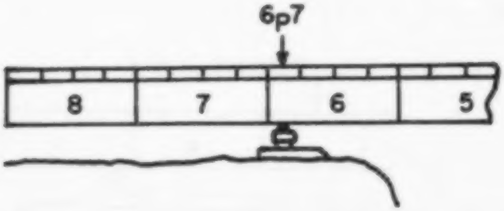
2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).



(42) Remove bay 9 top panel.

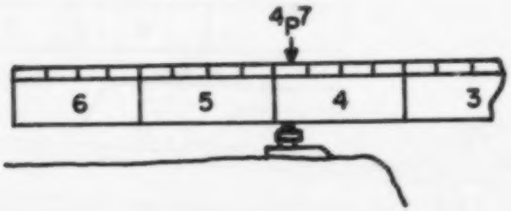


(43) De-launch bridge until panel point 6p7 is over the roller beam.



(44) Connect and pin heavy nose section (1N1) to launching nose.

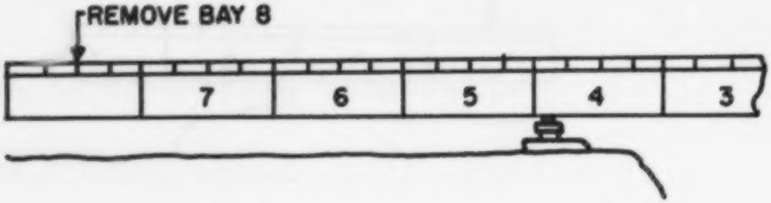
(45) De-launch bridge until panel point 4p7 is over the roller beam.



(46) Connect and pin the rear section of the light launching nose to 1N1.

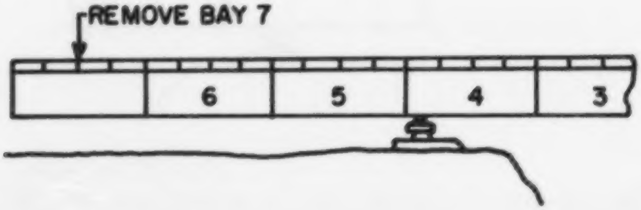
2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(47) Remove Bay 8 top panel.

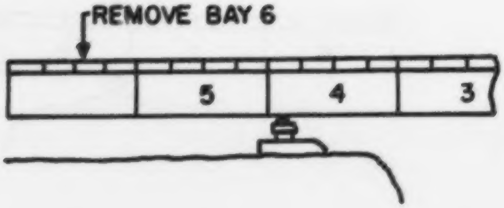


(48) Remove deck unit from next to last deck unit recess of Bay 7.

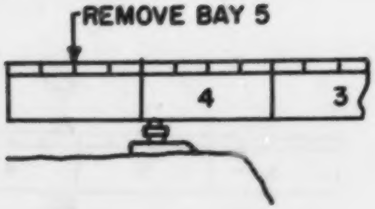
(49) Remove Bay 7 top panel.



(50) Remove Bay 6 top panel.



(51) Remove Bay 5 top panel.

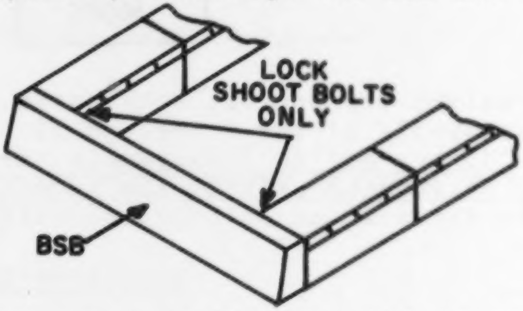


(52) Refit the BSB to the end of Bay 4 top panels.

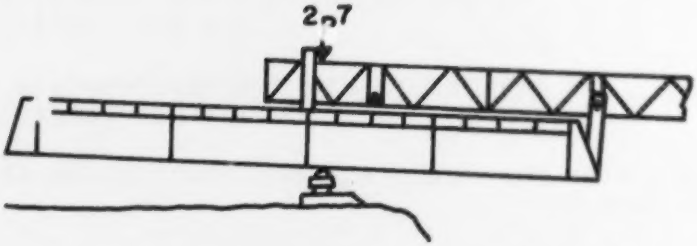
(a) Engage dowels and sockets of BSB and top panels, close shoot bolts.

2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(b) DO NOT put a panel pin through the BSB and top panels.

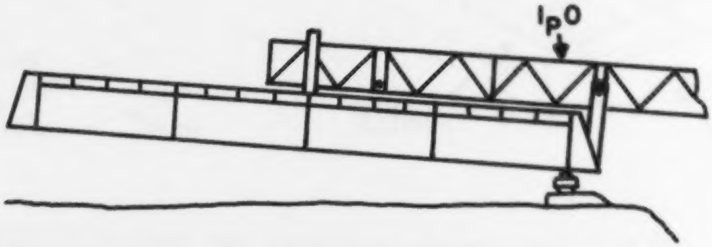


(53) De-launch bridge until panel point 2p7 is over the roller beam.

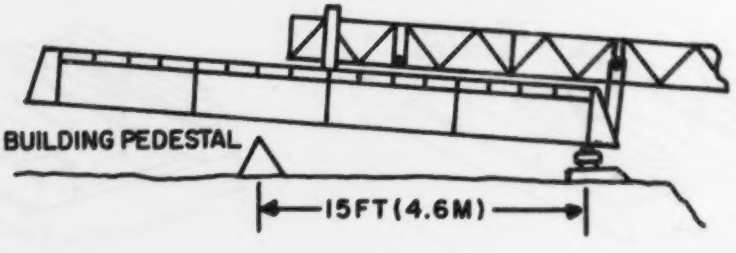


(54) Connect and pin the front section of the light launching nose to rear section.

(55) De-launch bridge until panel point 1p0 is over the roller beam.



(56) Position building pedestals under girders about 15 ft (4.6 m) behind roller beam.



2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

NOTE

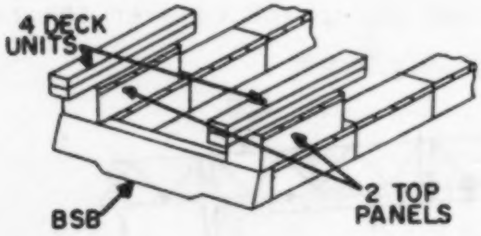
Counterweight top panels, deck units, and BSB are required for the disassembly of the 9 through 12 bay bridges on restricted sites. DO try NOT to disassemble the nose without counterweight. As counterweights are added, the rear of bridge will begin to set down on building pedestals.

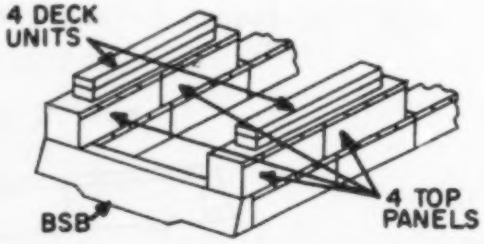
Counterweight

Bridge Length	Counterweight
9 and 10 bay	2 Top Panels, 4 Deck Units and BSB (2TP4D)
11 and 12 bay	4 Top Panels,4 Deck Units and BSB (4TP4D)

(57) Position the required counterweight on the rear of the bridge.

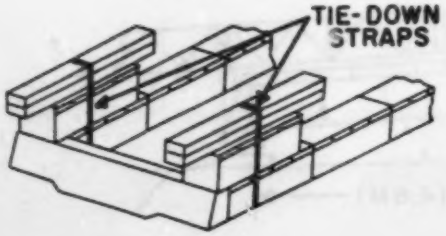
(a) Ensure that the counterweights are as far to the rear of the bridge as is possible.

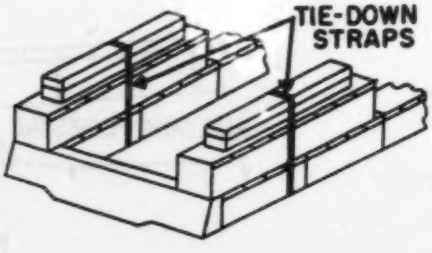




(b) Stack the counterweights as shown to provide space for the removal of the nose sections.

(c) Secure the counterweights to the bridge girders with 2 (two) 5,000 lb cargo tie-down straps.

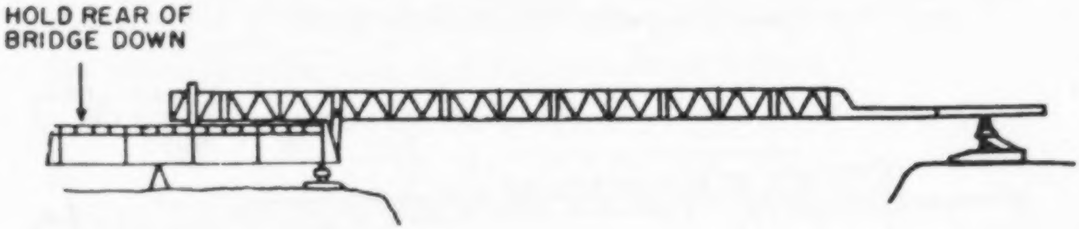




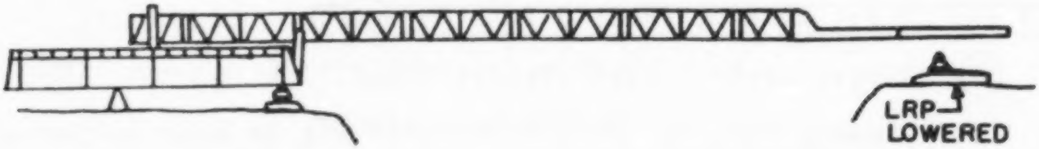
2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(58) Recover LRP.

(a) Hold rear of bridge down on RB and BP.



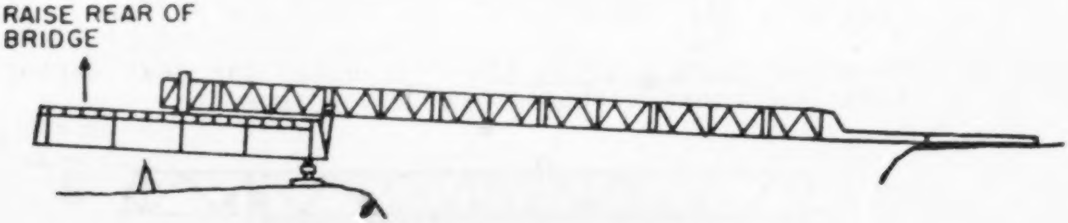
(b) Operate jack in LRP to lower it.



(c) Remove LRP from under launching nose, and remove the jack.

(d) Place jack and handle into the closed LRP.

(e) Raise rear of bridge to put tip of light launching nose on far bank.

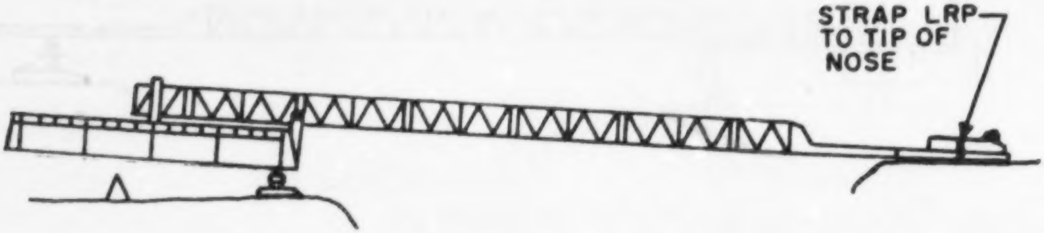


2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(f) Place LRP on top of light launching nose.

(g) Secure LRP to nose using a 5,000 lb cargo tie-down strap.

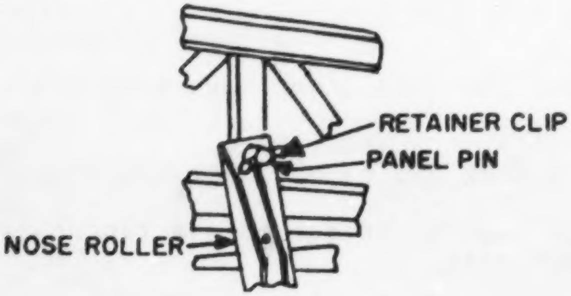
(h) Far bank crew returns to near bank.



For 9 and 10 bay bridge, PROCEED TO STEP (60) .

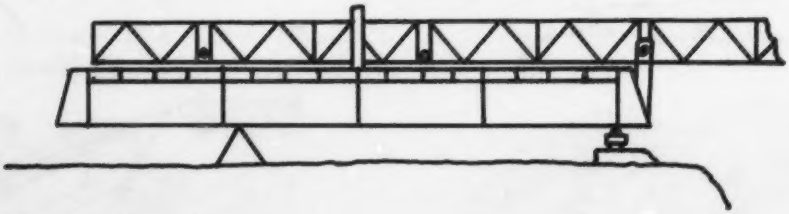
(59) Remove seventh nose section (7N1).

(a) Remove retainer clip from panel pin in nose roller and anchorage tube.



(b) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.

(c) Move launching nose to the rear until the next anchorage tube is aligned with nose roller.



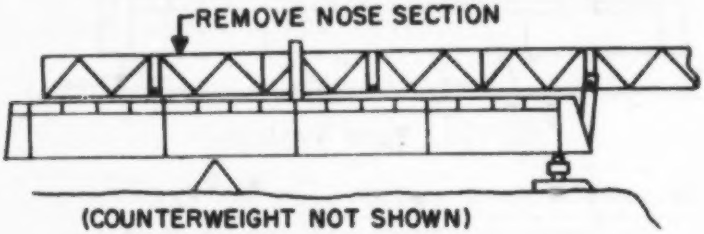
2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

(d) Put panel pin through nose roller and anchorage tube.

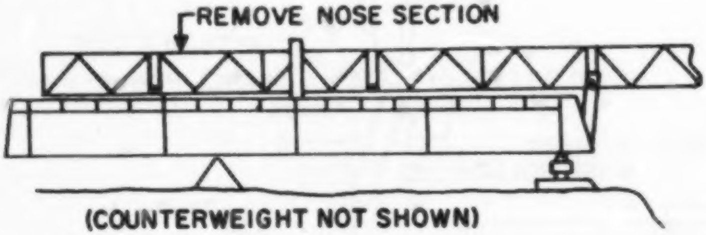
(e) Remove retainer clip and nose pin from last nose section.

(f) Unlock shoot bolts in last nose section.

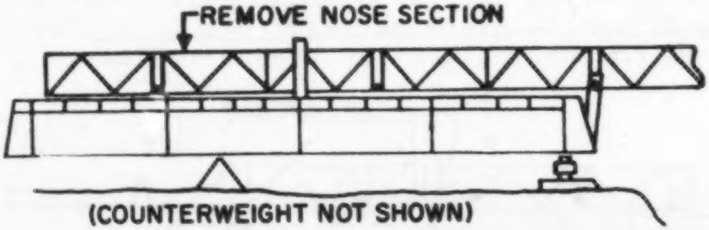
(g) Remove last nose section.



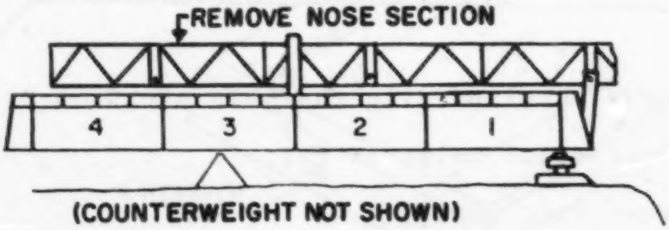
(60) Remove sixth nose section (6N1).



(61) Removes fifth nose section (6N1).



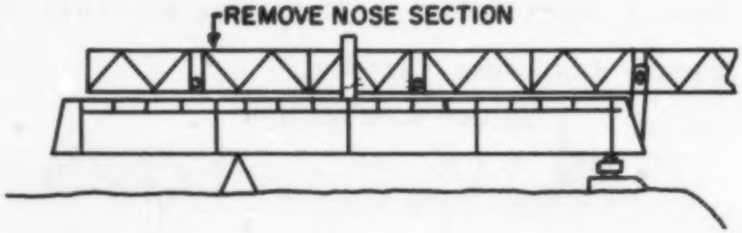
(62) Remove fourth nose section (4N1).



2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

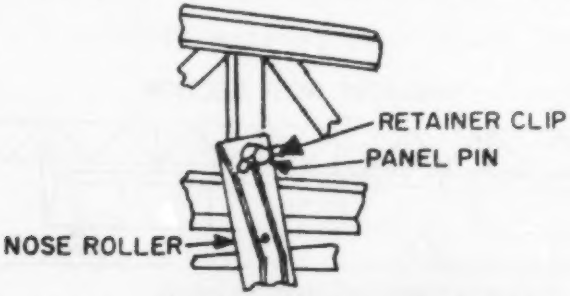
(63) Remove counterweight deck units and top panels.

(64) Remove third nose section (3N1).

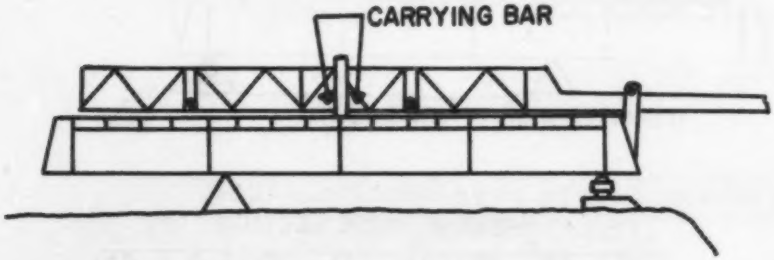


(65) Remove second nose (2N1).

(a) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.



(b) Move launching nose to rear until the rear vertical of nose section (1N1) has passed the rollers in the LNCG. Put a carrying bar through the nose section. If tip of nose is uphill place bar in front of rollers. If tip is downhill place bar behind rollers.



(c) Remove retainer clip and nose pin from 2N1.

(d) Unlock shoot bolts in 2N1.

(e) Remove nose (2N1).

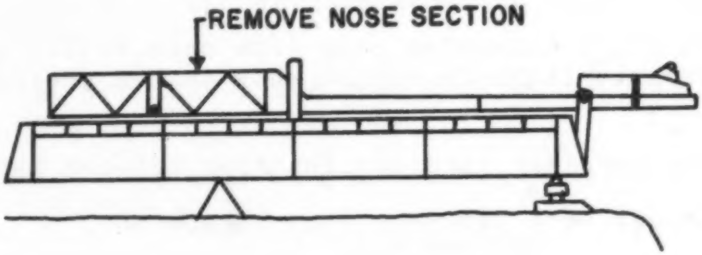
(66) Remove first nose (1N1).

(a) Move launching nose toward rear of site. Stop movement when the rear of the light launching nose rear unit is over the LNCG.

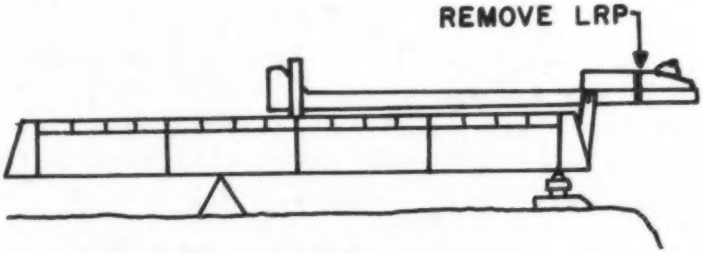
(b) Remove retainer clip and nose pin and nose section.

(c) Unlock shoot bolts in 1N1.

(d) Remove nose section (1N1).



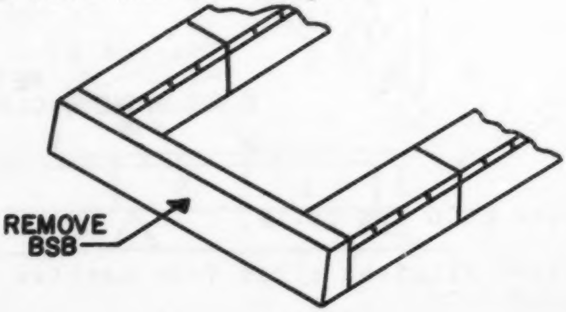
(67) Remove LRP from tip of launching nose.



(68) Remove BSB.

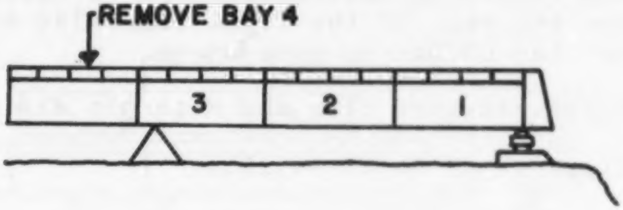
(a) With six men lifting on BSB, unlock shoot bolts.

(b) Remove BSB from end of bridge.



2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

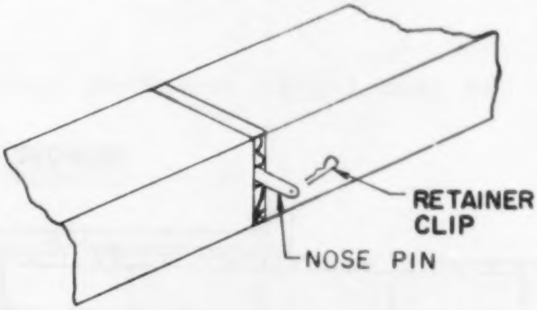
(69) Remove Bay 4 top panel.



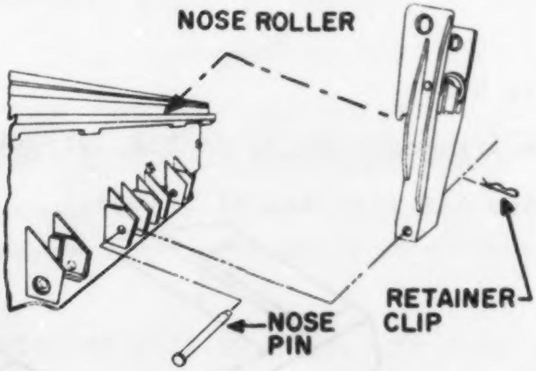
(70) Remove light launching nose from nose roller and LNCG. Disassemble light launching nose on the ground behind LNCG.

(a) Remove retainer clip and nose pin between nose sections.

(b) Disengage nose sections from each other.



(71) Remove nose roller from the BSB.

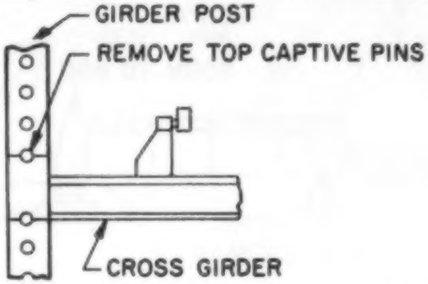


(72) Remove LNCG and posts.

(a) Remove retainer clips from captive pins in the LNCG and posts.

2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

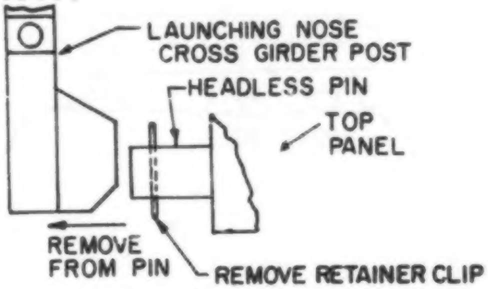
(b) Remove the top captive pins from LNCG and posts.



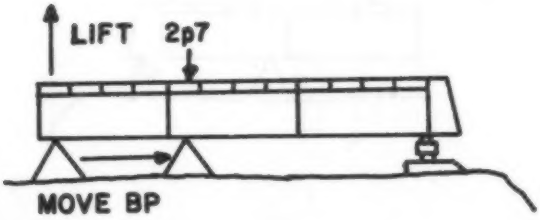
(c) Lift the LNCG at both ends and remove the bottom captive pin.

(d) Let the LNCG slide down the posts until it is free. Remove LNCG.

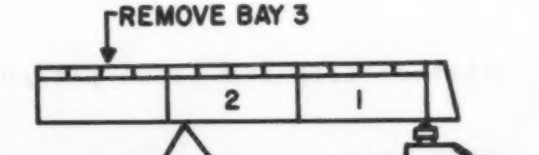
(e) Remove retainer clips from headless pin in the bottom of the LNCG posts.



(73) Lift the rear of the girders at Bay 3 and reposition the building pedestals under the rear of Bay 2 (at panel point 2p7).

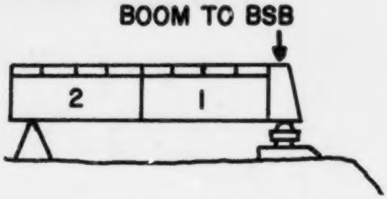


(74) Remove Bay 3 top panel.

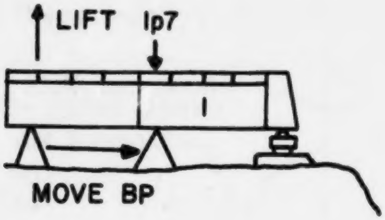


2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).

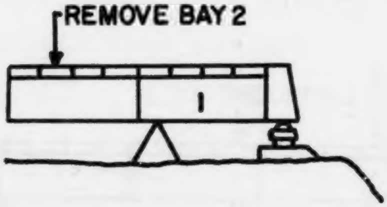
(75) Boom bridge until BSB is centered over the roller beam.



(76) Lift the rear of the girders at Bay 2 and reposition the building pedestals under the rear of bay 1 (at panel point 1p7).



(77) Remove Bay 2 top panel.



(78) To remove Bay 1 top panels.

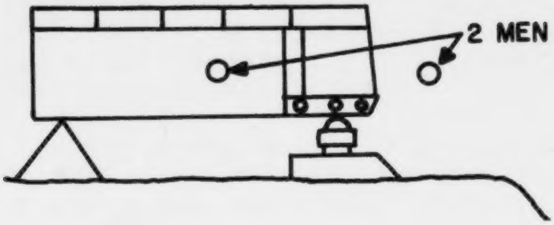
(a) Using at least 2 personnel, steady BSB on top of roller beam.

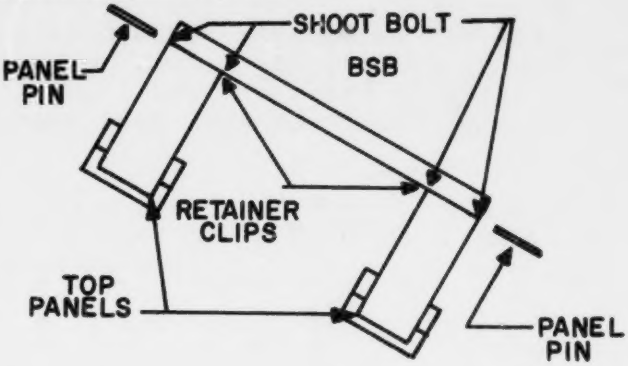
(b) Remove retainer clip and panel pin connecting top panel to BSB.

(c) Unlock shoot bolts.

(d) Remove top panels.

2-23. DISASSEMBLY - SINGLE STORY - 9 thru 12 BAY (Restricted Site) (Cont).





(79) Remove BSB from RB.

(80) Disassemble roller beam.

(a) Remove roller beam fom the fixed supports.

(b) Remove the fixed supports from the baseplates.

(81) Remove all components from site.

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2-24. ASSEMBLY - DOUBLE STORY - GENERAL.

This paragraph will describe step by step procedures for constructing all lengths of double story bridges. The procedures will start with the assembly of the building frame. Marking of site, pallet off-loading, and placement have been covered in earlier sections of this chapter.

Since the assembly procedures are different for each length of bridge, the user will be instructed to proceed to certain steps as required for the bridge that is being built.

EXAMPLE: Constructing a 2E + 10 Bay Double Story MGB.

When constructing a 2E + 10 bay, Steps 2.a.(1) through 2.a.(40) are performed. At the end of Step 2.a.(40) the user is instructed to proceed to Step 2.a.(43) for construction of the 2E + 10 bay bridge.

DO EXACTLY THAT. DO NOT PERFORM Step 2.a.(41), Step 2.a.(42). These steps are used when constructing another length of bridge.

At the end of Step 2.a.(43) there are no instructions to proceed to another step. The user should continue by going to the next step, which in this case is 2.a.(44). The rule to follow is: Continue performing the steps in the order they are given, unless instructed to proceed to another step.

Following that rule, the user performs Steps 2.a.(44) and 2.a.(45).

2-24. ASSEMBLY - DOUBLE STORY - GENERAL (Cont).

TABLE 2-31. Required Steps Per Bridge Length.

2E + 1	2E + 2	2E + 3	2E + 4	2E + 5	2E + 6
1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (23) (26) through (34) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (24) (26) through (36) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (36) (45) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (36) (43) (45) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (38) (43) (45) and (46) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (38) (43) (45) through (47) (51) (66) through (92)

2E + 7	2E + 8	2E + 9	2E + 10	2E + 11	2E + 12
1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (38) (43) (45) through (49) (51) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (40) (43) through (45) (47) through (51) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (40) (43) through (45) (47) through (52) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (40) (43) through (45) (47) through (53) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (45) (47) through (64) (66) through (92)	1.a(1) through (15) 1.b(1) and (2) 2.a(1) through (45) (47) through (92)

Once the user becomes familiar with the step by step procedures of construction, it will be possible to construct any Double Story 2E + 1 through 2E + 12 bay bridge by using the Building and Booming Table 2-32.

This table provides the necessary instructions to construct, boom and launch all bridges.

DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site).

TABLE 2-32. Building and Boom Table - 2E + 1 thru 2E + 12 Bay Double Story (Normal Site).

Bridge ft Length m	37 11.3	43 13.1	49 14.9	55 16.8	61 18.6	67 20.4
2E + No. of Bays	1	2	3	4	5	6
Nose Construction	2N1	3N1	3N1	3N1	4N1	4N1
Build E + 1 and Position RRB at	1p3	1p6	1p4	1p4	1p4	1p4
ADD (CG)	2N1 (Bp7)	3N1 (Bp5)	2, 3, and 3N1 (Bp0)	2, 3, and 3N1 (Bp0)	2, 3, and 4N1 (Bp2)	2, 3, and 4N1 (Bp2)
ADD (CG)	E (1p0)	E (1p2)		4 (Ap2)	4 (Ap2)	4 (Ap2)
Boom To and ADD (CG)			2p4 E (1p6)	3p0 E (2p3)	3p0 5 and E (2p5)	3p0 5 and 6 (1p6)
Boom To and ADD (CG)						4p0 E (3p1)
Launch To and Position under LZ	1p0 LRP 3	1p2 LRP 8	1p6 LRP 5	2p3 LRP 4	2p5 LRP 8	3p1 LRP 5
Continue Launch To and REMOVE	Dp2 RRB LLN(F)*	Dp2 RRB LLN*	Dp2 RRB LLN*	Dp2 RRB LLN*	Dp2 RRB LLN and LNH*	Dp2 RRB LLN and LNH*
	Continue launch until RBSB overhangs FRB 1.5 ft (0.46 m). OR Far bank BSB touches F peg. Lower far bank end of bridge. Remove last 3 nose sections. Put near bank end of bridge on ground.					

* = Nose sections removed as they pass the LRB. Leave the last 3 nose sections in place until far bank end of bridge has been lowered to the ground. Reposition LRP and remove last 3 nose sections.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

TABLE 2-32. Building and Boom Table - 2E + 1 thru 2E + 12 Bay Double Story (Normal Site).(Cont).

Bridge ft Length m	73 22.3	79 24.1	85 25.9	91 27.7	97 29.6	103 31.4
2E + No. of Bays	7	8	9	10	11	12
Nose Construction	4N1	5N1	5N1	5N1	6N1	6N1
Build E + 1 and Position RRB at	1p4	1p4	1p4	1p4	1p4	1p4
ADD (CG)	2, 3, and 4N1 (Bp2)	2, 3, and 5N1 (Bp5)	2, 3, and 5N1 (Bp5)	2, 3, and 5N1 (Bp5)	2, 3, and 6N1 (Bp7)	2, 3, and 6N1 (Bp7)
ADD (CG)	4 (Ap2)	4 and 5 (1p0)	4 and 5 (1p0)	4 and 5 (1p0)	4 and 5 (Ap2)	4 and 5 (Ap2)
Boom To and ADD (CG)	3p0 5, 6, and 7 (2p2)	3p2 6, 7, and 8 (2p5)	3p2 6, 7, and 8 (2p5)	3p2 6, 7, and 8 (2p5)	3p0 6, 7, and 8 (2p3)	3p0 6, 7, and 8 (2p3)
Boom To and ADD (CG)	4p4 E (3p6)	4p6 E (3p7)	4p6 9 and E (4p3)	4p6 9 and 10 (3p5)	4p4 9, 10, and 11 (3p7)	4p4 9, 10, and 11 (3p7)
Boom To and ADD (CG)				5p7 E (5p0)	6p1 E (5p2)	6p1 12 and E (5p6)
Launch To and Position under LZ	3p6 LRP 4	3p7 LRP 8	4p3 LRP 5	5p0 LRP 3	5p2 LRP 8	5p6 LRP 5
Continue Launch To and REMOVE	Dp2 RRB LLN and LNH*	Dp2 RRB LLN and LNH*	Dp2 RRB LLN and LNH*	Dp2 RRB LLN and LNH*	Dp2 RRB LLN and LNH*	Dp2 RRB LLN and LNH*
Continue launch until RBSB overhangs FRB 1.5 ft (0.46 m). OR Far bank BSB touches F peg. Lower far bank end of bridge. Remove last 3 nose sections. Put near bank end of bridge on ground.						

* = Nose sections removed as they pass the LRB. Leave the last 3 nose sections in place until far bank end of bridge has been lowered to the ground. Reposition LRP and remove last 3 nose sections.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

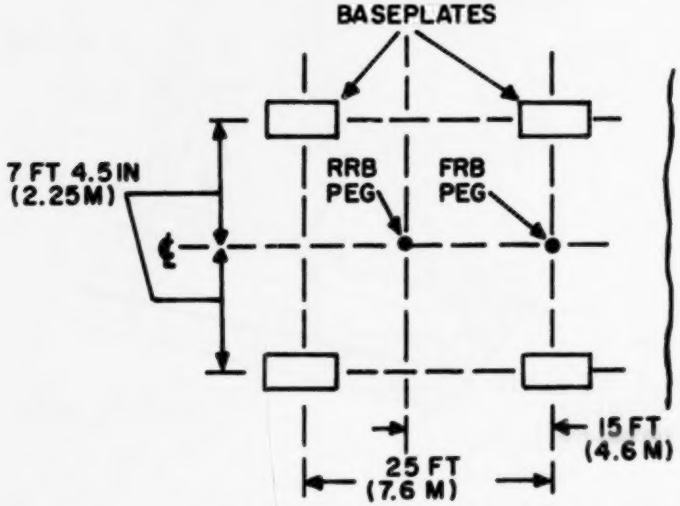
For 2E + 1 thru 2E + 12 Bay DS MGB's, PROCEED TO STEP 1.

Step 1. Erecting Building Frame.

Steps needed to set up and align the building frame are as follows:

a. Setting up building frame.

① Put four double story baseplates on site as shown.



NOTE

The placement of the RRB baseplates at 25 ft (7.6 m) is a temporary placement. The RRB, when assembled will be moved later during construction.

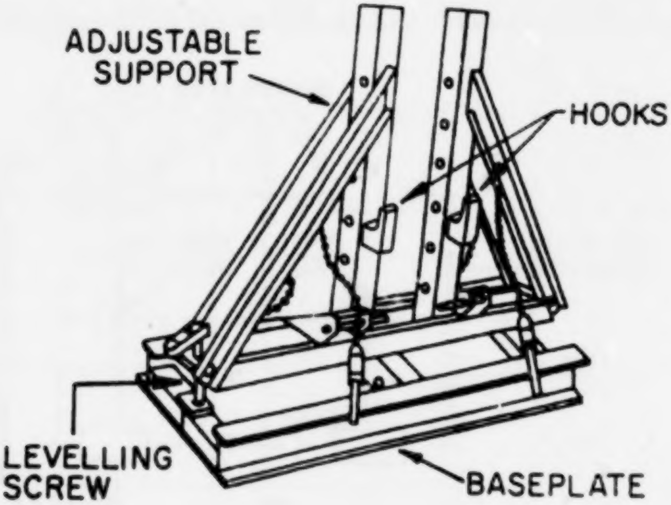
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 1.a. Setting up Building Frame (Cont).

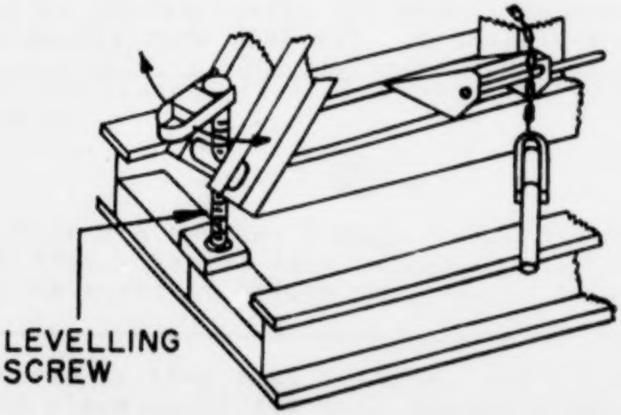
② Position and hold a roller beam adjustable support on each FRB baseplate.

(a) Ensure that hooks on supports face centerline.

(b) Seat levelling screws in holes of baseplates.



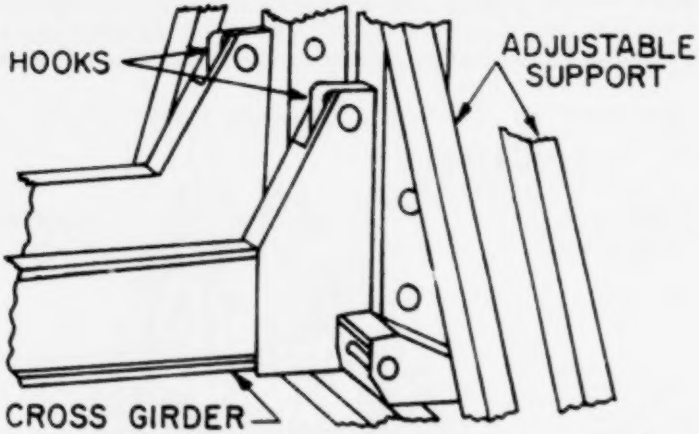
(c) Turn the front or rear adjustable support levelling screws into the baseplate sockets so that adjustable support is vertical. Allow 1/4 in (6 mm) space between screw and socket so that the support may rock back and forth on the pivot (front to rear).



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 1.a. Setting up Building Frame (Cont).

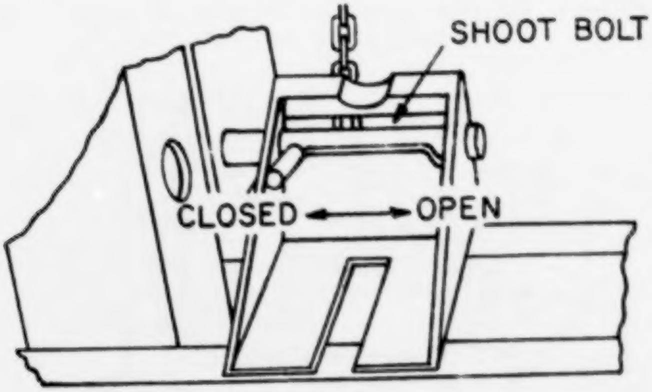
③ Hook a building frame cross girder on adjustable supports for FRB.



NOTE

One of the supports may have to be moved slightly so both ends of the cross girder can be attached.

④ Push shoot bolts through each cross girder and support brackets.



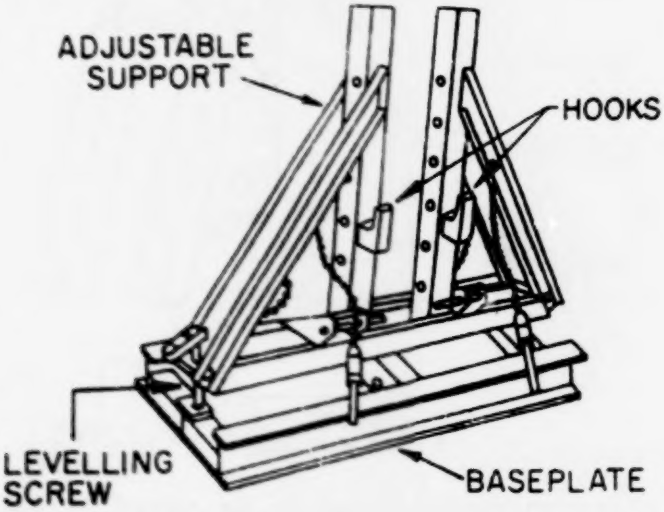
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 1.a. Setting up Building Frame (Cont).

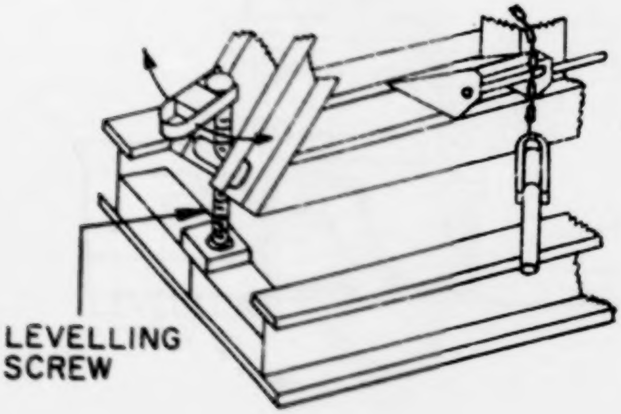
⑤ Position and hold a roller beam adjustable support on each RRB baseplate.

(a) Ensure that hooks on supports face centerline.

(b) Seat levelling screws in holes of baseplates.



(c) Turn the front or rear adjustable support levelling screws into the baseplate sockets so that adjustable support is vertical. Allow 1/4 in. (6 mm) space between screw and socket so that the support may rock back and forth on the pivot (front to rear).



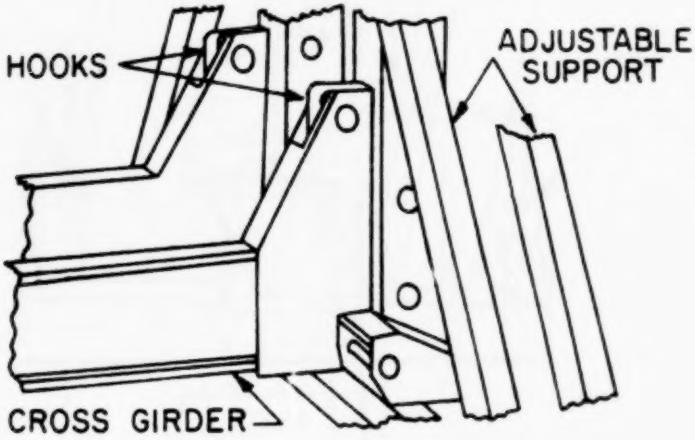
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 1.a. Setting up Building Frame (Cont).

NOTE

Slight readjustment of levelling screws may be required when RRB is moved later during construction.

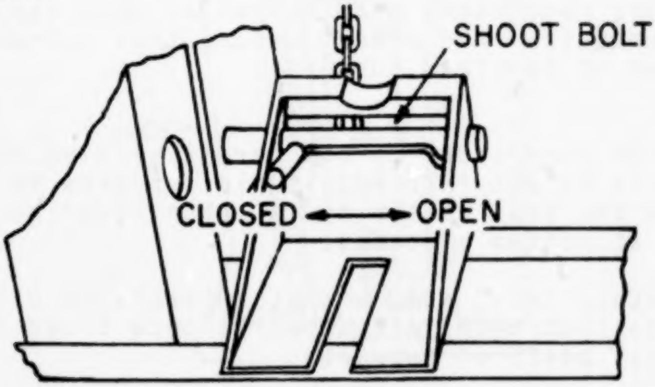
⑥ Hook a building frame cross girder on adjustable supports for RRB.



NOTE

One of the supports may have to be moved slightly so both ends of the cross girder can be attached.

⑦ Push shoot bolts through each cross girder and support brackets.



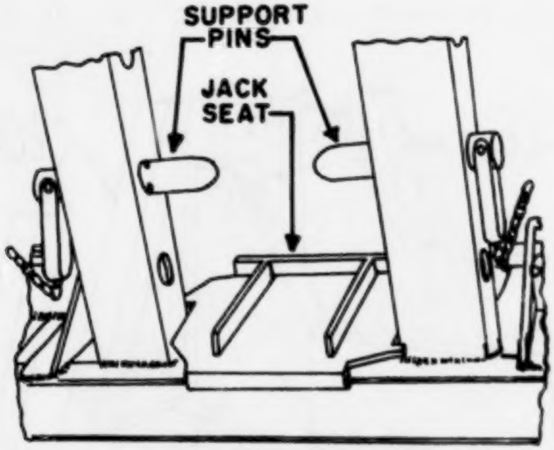
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 1.a. Setting up Building Frame (Cont).

⑧ Place a jack seat over support pins or lower rail in each adjustable support located at the FRB peg line.

(a) Curved cutouts fit over pins or rail in bottom of support.

(b) Open end of U-shaped ridge faces away from centerline.



NOTE

If roller beam is set higher than the lowest setting, push captive support pin through each adjustable support post at proper height. If support pins are used, ensure that they are fully seated (pushed in) and that the jack seat is fully seated on each pin.

⑨ Place a roller beam into the adjustable supports of the FRB.

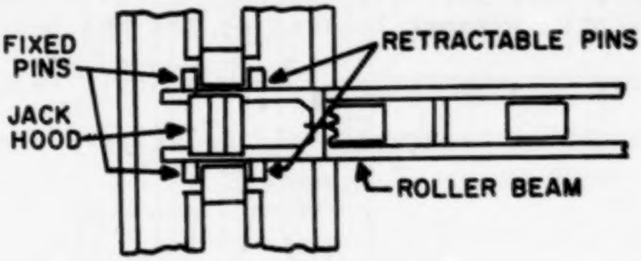
(a) If site conditions permit, roller beam can be slid into supports from the side. Ensure that retractable pins are pushed in to clear supports.

(b) If site conditions do not permit sliding the roller beam, it will be put into adjustable supports by lifting beam above the tops of the posts, then lowering it until beam sets at bottom of posts.

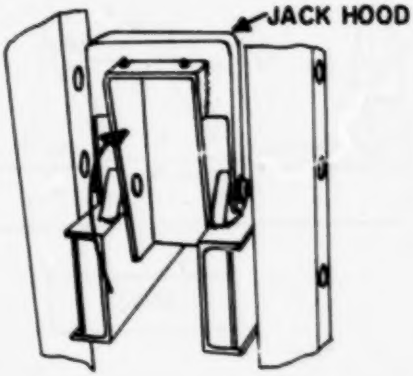
(c) In either case, ensure that retractable pins are pushed out to lock beam into supports once fixed pins are butted against posts of supports.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 1.a. Setting up Building Frame (Cont).



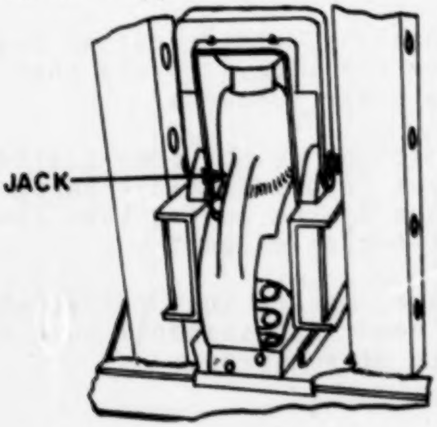
⑩ Raise jack hood on each end of roller beam



⑪ Place a hydraulic jack (15 ton) on each jack seat.

(a) Operate hydraulic jack to raise roller beam 1/2 in (13 mm).

(b) Do not remove support pins.



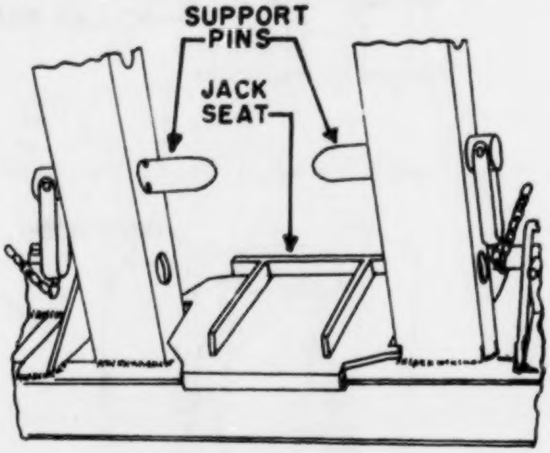
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 1.a. Setting up Building Frame (Cont).

⑫ Place a jack seat over support pins or lower rail in each adjustable support located at the RRB peg line.

(a) Curved cutouts fit over pins or rail in bottom of support.

(b) Open end of U-shaped ridge faces away from centerline.



NOTE

If roller beam is set higher than the lowest setting, push captive support pin through each adjustable support post at proper height. If support pins are used, ensure that they are fully seated (pushed in) and that the jack seat is fully seated on each pin.

⑬ Place a roller beam into the adjustable supports of the RRB

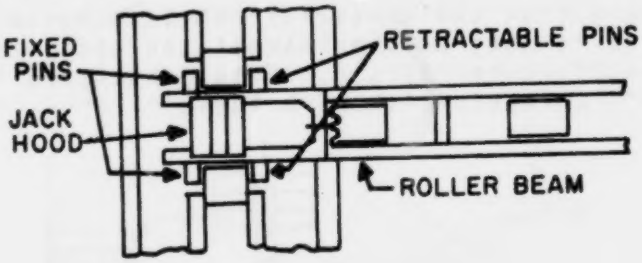
(a) If site conditions permit, roller beam can be slid into supports from the side. Ensure that retractable pins are pushed in to clear supports.

(b) If site conditions do not permit sliding the roller beam, it will be put into adjustable supports by lifting beam above the tops of the posts, then lowering it until beam sets at bottom of posts.

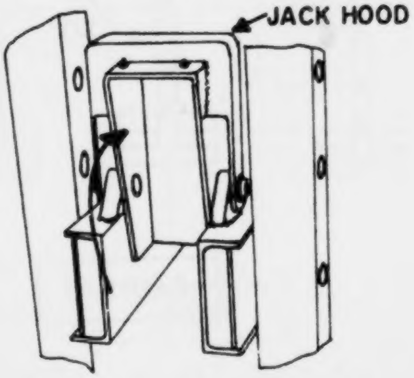
(c) In either case, ensure that retractable pins are pushed out to lock beam into supports once fixed pins are butted against posts of supports.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont)

Step 1.a. Setting up Building Frame (Cont).



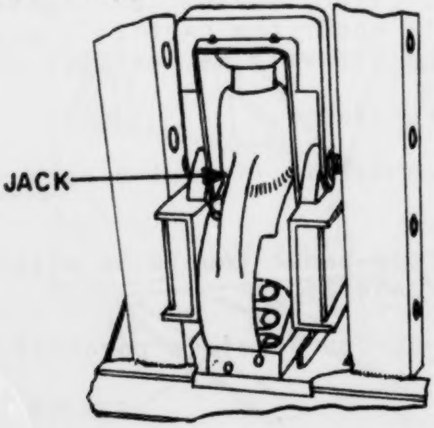
⑭ Raise jack hood on each end of roller beam.



⑮ Place a hydraulic jack (15 ton) on each jack seat.

(a) Operate hydraulic jack to raise roller beam 1/2 in (13 mm).

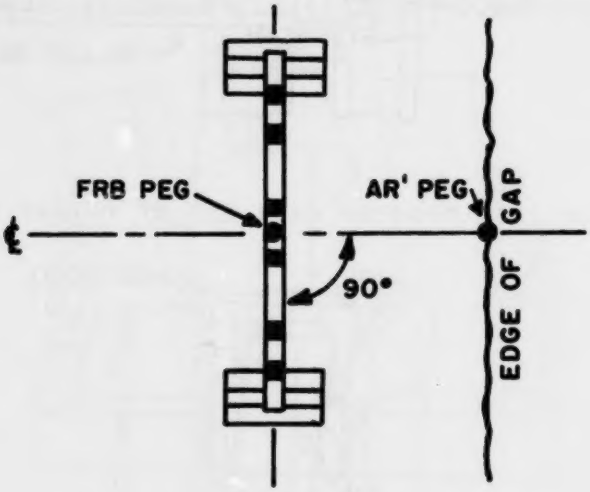
(b) Do not remove support pins.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 1 b. Aligning the Building Frame.

① Ensure that the center of FRB is over centerline of bridge. If it is not, pull on baseplates until center of FRB is directly over FRB peg. Ensure that FRB is at right angle (90°) to centerline of bridge.



CAUTION

It is very important that FRB be correctly positioned at this time. If it is not, serious problems will arise later during construction. These problems range from skewing of the bridge off of the centerline to possible damaging of the bridge and roller beams.

② The RRB does not have to be centered or levelled. The location of it at 25 ft (7.6 m) is only an approximate requirement. Later, during construction the RRB will be moved forward under the partially assembled bridge. At that time the RRB will be levelled and centered.

Step 2.a. Assembly Procedures.

① Place a top panel in line with each set of outer rollers of the FRB.

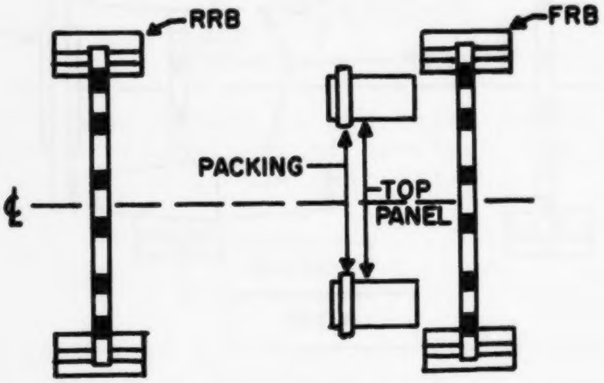
(a) Corner of top panel should be within 3 in (76 mm) of corner of baseplate.

(b) Long side of top panel is parallel to bridge centerline.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

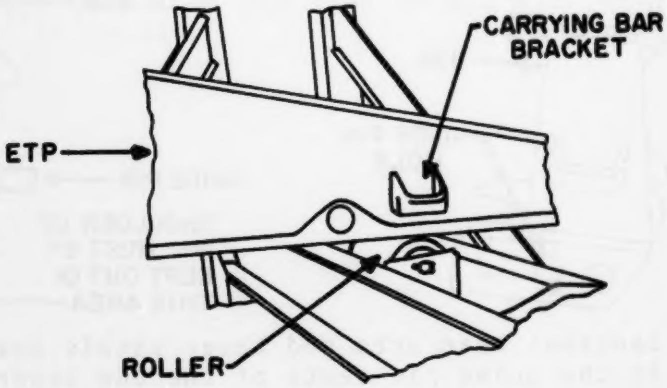
② Place a piece of packing across rear of top panel. Adjust the packing so that it will not be in the way when the junction panel is attached to the end taper panel (end of end taper panel extends behind the packing).



NOTE

Packing must be as close to the end of end taper panel as possible without interfering with connection of the junction panel to end taper panel.

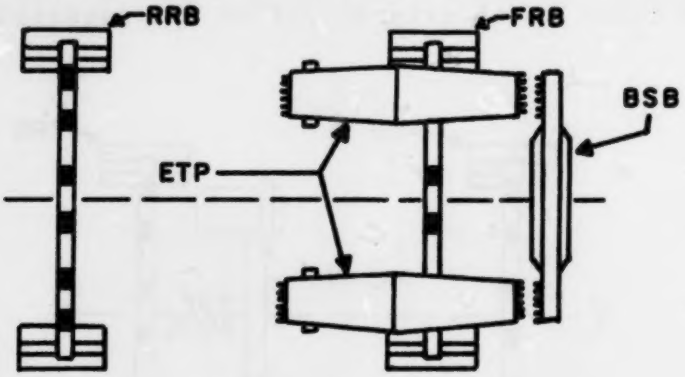
③ Lay end taper panels (ETP) on the FRB and piece of packing. The front carrying bar bracket on end taper panel is located over roller beam roller. Ensure that roller catch is engaged (rollers locked).



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

④ Carry bankseat beam (BSB) into position in front of FRB and align it with end taper panels.



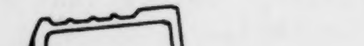
NOTE

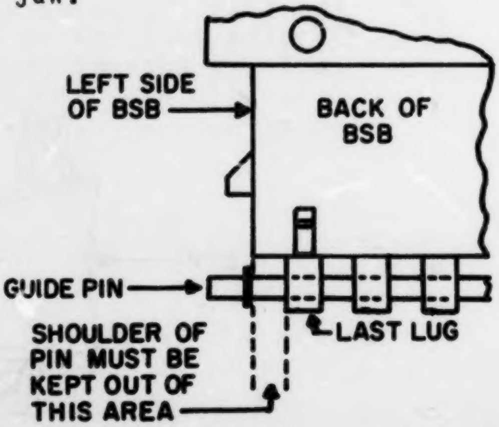
All panel pins are inserted from the outside of the bridge toward the inside, unless instructed otherwise.

⑤ Place guide (panel) pins into middle panel pin holes on bankseat beam.

(a) Guide pin on left side of BSB must extend out from last lug so the shoulder of the pin is in line with the end of the BSB.

(b) Guide pin on right side of BSB is put in BSB until shoulder of pin is touching jaw.

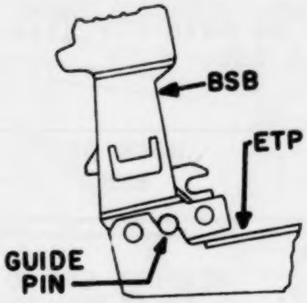




⑥ Lift bankseat beam onto end taper panels seating the guide pins in the guide pin seats of the end taper panels.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

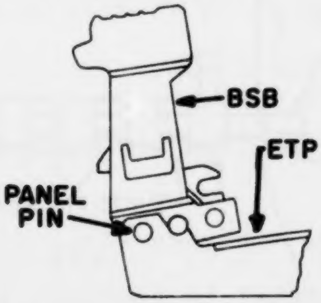


⑦ Connect bankseat beam to end taper panels by inserting panel pins through jaws of bankseat beam and end taper panels (1st hole on bankseat beam).

NOTE

To make insertion of panel pin easier: Check alignment of bankseat beam with end taper panel.

(a) Insert panel pin in first hole of BSB, do not remove pin once it is started in hole.

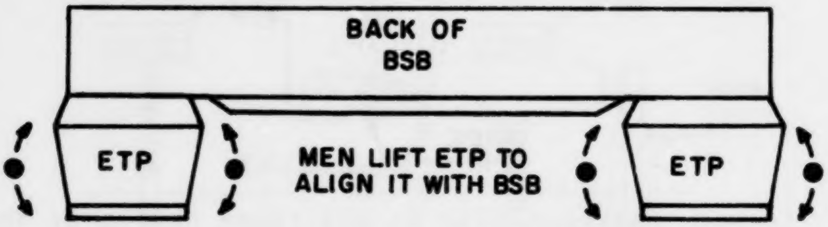


(b) Two personnel on gap side of BSB will move beam up or down as needed.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

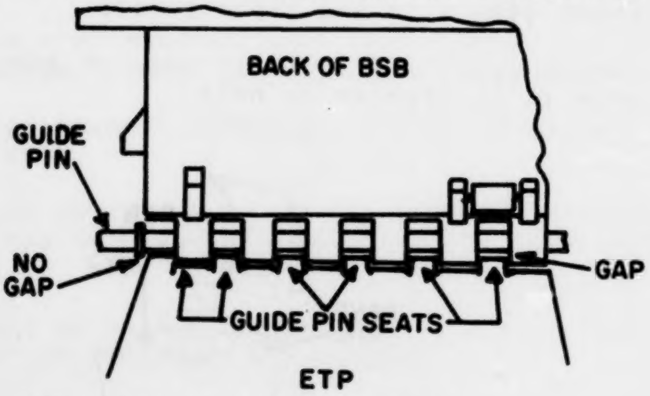
Step 2.a. Assembly Procedures (Cont).

(c) Two personnel on each ETP will lift ETP as needed to align ETP with BSB.



(d) NCOIC of detail will check gaps at guide pin and seats and direct crews to move ETP's and BSB as needed to get pins in.

(e) Lift ETP on side where gap appears between pin and pin seat.



⑧ Fit first top panel to bankseat beam.

(a) Engage dowels and sockets of both the top panel and bankseat beam.

(b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.

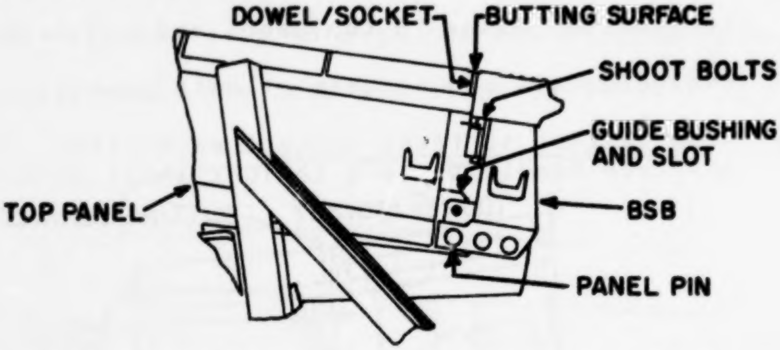
(c) Let rear of panel rest on ETP. Guide bushings and slots will line up pin jaws.

(d) Insert panel pin until shoulder butts against jaw of panel.

(e) Put retainer clip through the end of panel pin.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).



⑨ Lift rear of both top panels and place a panel pin behind pin stops on ETP's.

NOTE

This pin supports the rear of the top panel, and will ease installation of the junction panel later.

⑩ Pin second top panel to first top panel.

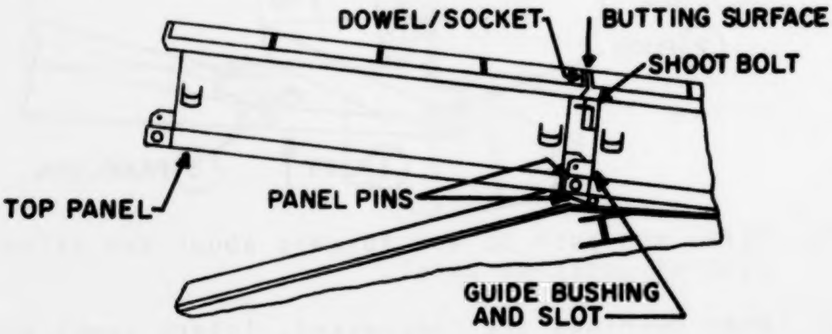
(a) Engage dowels and sockets of both top panels.

(b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.

(c) Let rear of panel down. Guide bushings and slots will line up pin jaws.

(d) Insert panel pin until shoulder butts against jaws of panel.

(e) Put retainer clip through the end of panel pin.



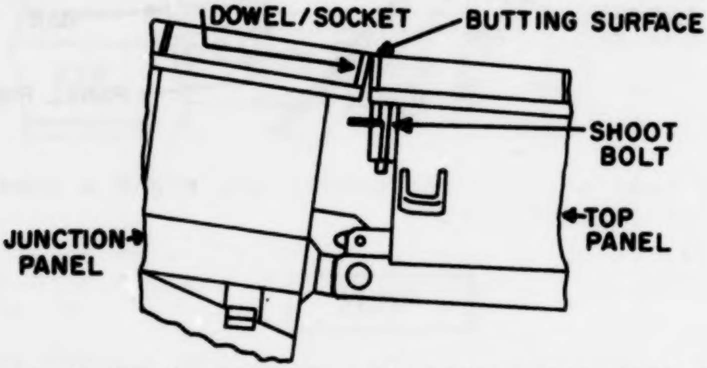
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

⑪ Pin junction panel to top panel and end taper panel.

(a) Engage dowels and sockets of both panels.

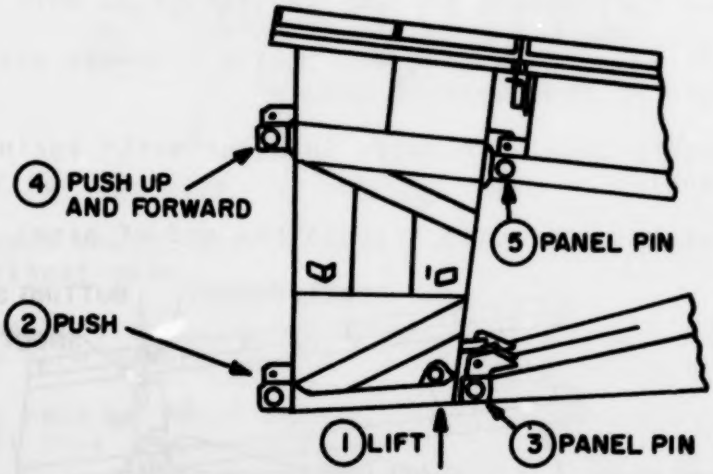
(b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.



(c) Two personnel, one on each side, will lift the front of junction panel as the two personnel, one on each side at rear of panel, push the bottom toward the ETP.

(d) When bushings are compressed, insert panel pin until shoulder touches jaw.

(e) Put retainer clip through the end of panel pin.



(f) Three men push up and forward about two thirds up the back of junction panel.

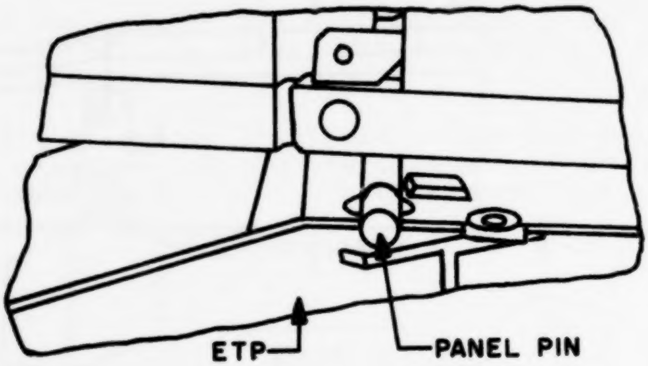
(g) When bushings are compressed, insert panel pin in upper pin jaws until shoulder touches pin jaws.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(h) Put retainer clip through the end of panel pin.

(i) Remove panel pin from pin stops on ETP.

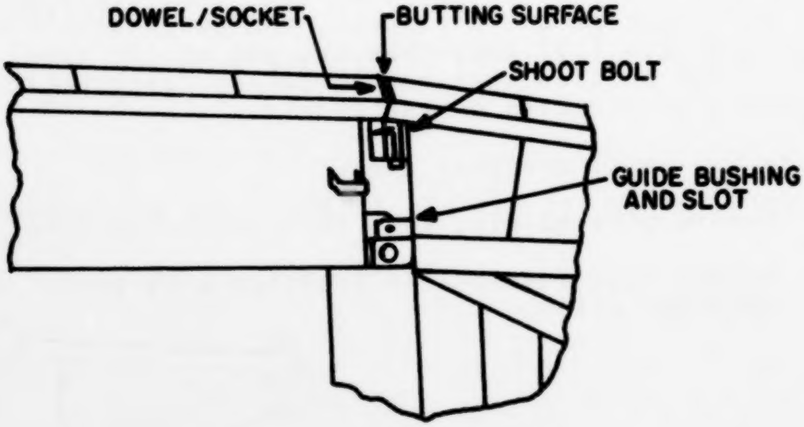


⑫ Pin bay 1 top panel to junction panel.

(a) Engage dowels and sockets of both panels.

(b) When butting surfaces contact each other, lift shoot bolts and turn handle to left to lock shoot bolt.

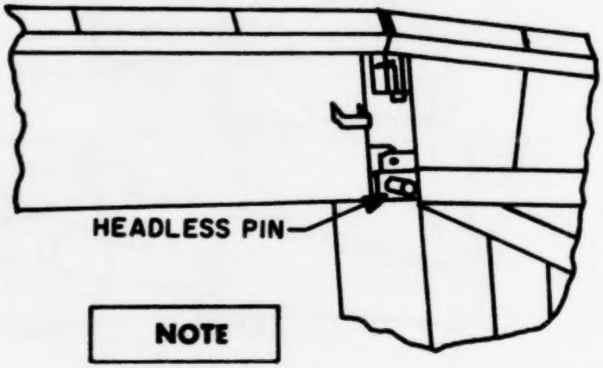
(c) Let rear of top panel down. Guide bushings and slots will line up pin jaws.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(d) Insert headless panel pin through the jaws until an equal amount of pin is showing on both sides of top panel. DO NOT PUT RETAINER CLIPS IN UNTIL BOTTOM PANEL IS JOINED TO TOP AND JUNCTION PANELS.



NOTE

A headless panel pin must be used here if there is any chance the bridge will be delaunched and disassembled on the far bank. Good practice is to ALWAYS USE A HEADLESS PANEL PIN IN THIS POSITION even if it is known the bridge will be pulled back to the near bank.

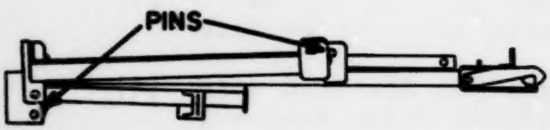
NOTE

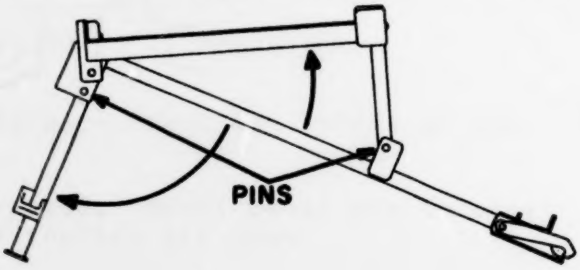
If the lift required to put the first top panels on the junction panel is very high and difficult, the panel erection aid may be used. STEP 2.a (13) describes the use of the panel erection aid. It can be used when needed during construction to connect top panels to junction or top panels.

⑬ To use panel erection aid:

(a) Remove pins holding legs in transit position.

(b) Unfold legs and lock in position with pins. Secure with retainer clips.





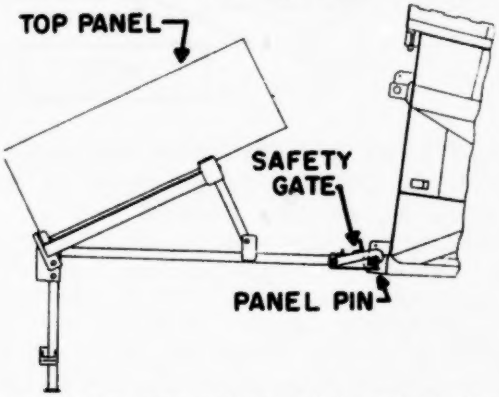
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(c) Insert a panel pin in lower jaws of junction panel. Shoulder of pin must be kept 1.75 in (45 mm) from outer jaw.

(d) Engage the jaws of the erection aid to the panel pin, ensuring that the safety gate is locked. The other end of aid rests on ground.

(e) Lift and place the front end of the top panel on the front cross bar of the erection aid, then slide the panel forward until its rear jaws are seated at the back of the aid.



(f) Lift the rear of the erection aid using two carrying bars in brackets on each side of leg. A third carrying bar bracket is available if needed. Lift until panel engages the junction panel and the shoot bolts can be engaged.

(g) Disengage the erection aid by raising the safety gate and removing the aid

OR

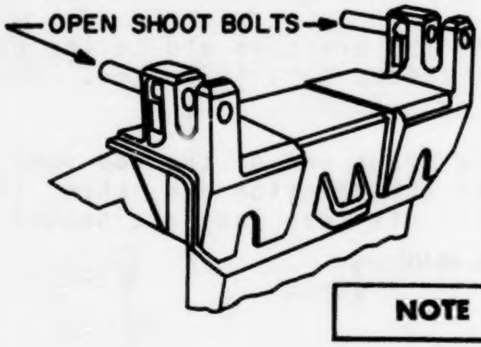
supporting the front of the aid and withdrawing the panel pin.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

⑭ Pin bay 1 bottom panel to top panel and junction panel.

(a) Pull shoot bolts in top jaws of bottom panel.



NOTE

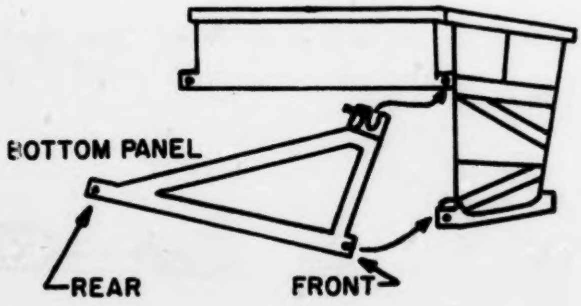
Bottom panel crew should pull the bottom panel shoot bolts before carrying bottom panel to work area (either while still on the pallet or on the ground beside pallet). For ease of construction carry bottom panels into place by walking directly behind top panel. Align bottom panel with bridge, lower the front of bottom panel while lifting slightly on rear of bottom panel and carrying panel into place. Fit bottom panel jaws around panel pin and close bottom panel shoot bolts while the rear end is still slightly higher than the front end. One crew member pushes down on the rear of bottom panel to align bottom pin holes and place panel pin through the hole.

(b) Lift rear end of bottom panel.

(c) Put top jaws around headless panel pin in top panel.

(d) Close and lock shoot bolts.

(e) Lower rear end of panel and let lower panel jaws fit into lower jaws on junction panel. Then push panel pin through jaws.

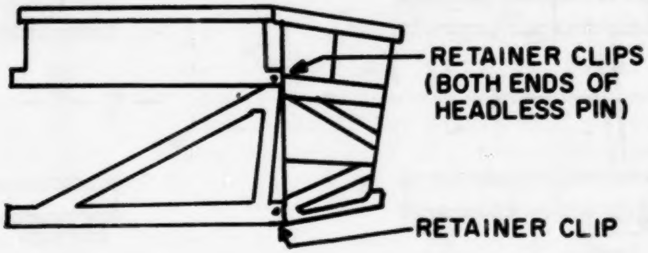


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(f) Put retainer clip through the end of panel pin.

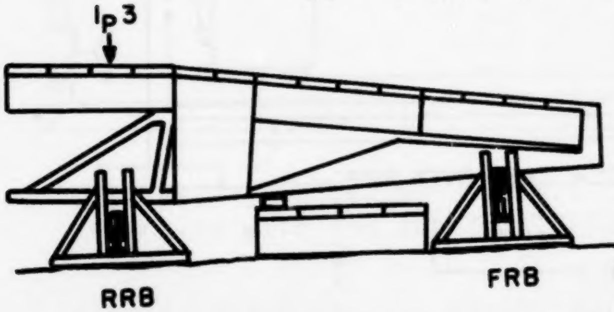
(g) Put retainer clips through both ends of headless pin.

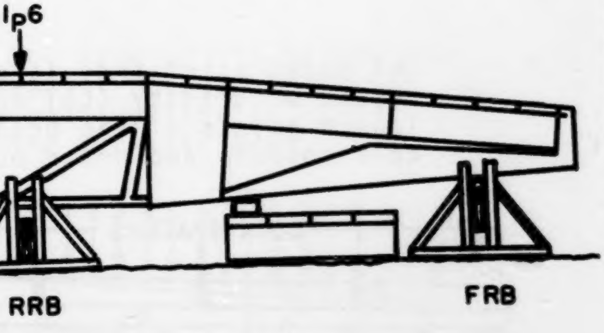


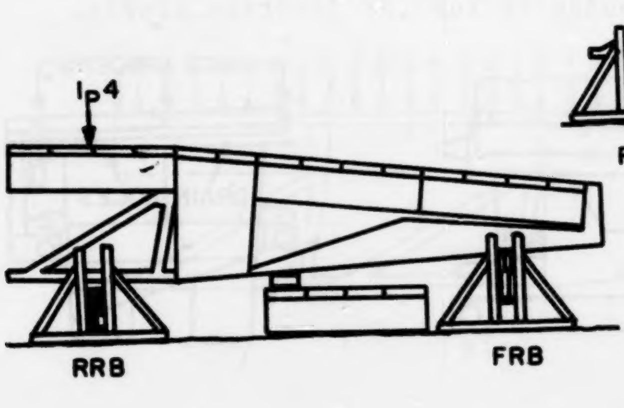
Bay 1 of the bridge has been built.

⑮ Push the rear roller beam (RRB) under bay 1 to the panel point given below for the bridge being constructed.

Bridge Length	Panel Point
2E + 1	1p3
2E + 2	1p6
2E + 3 thru 2E + 12	1p4



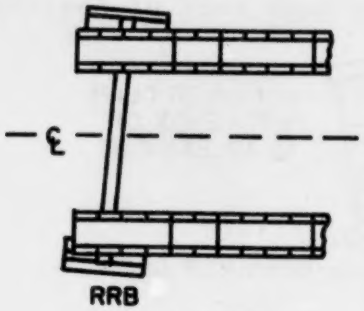




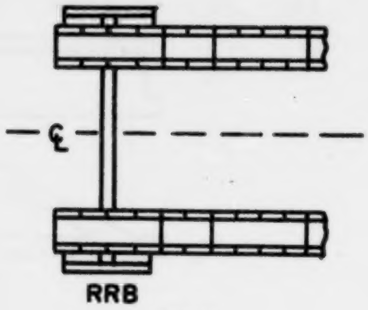
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(a) Align roller beam under panel point given on both sides of bridge.

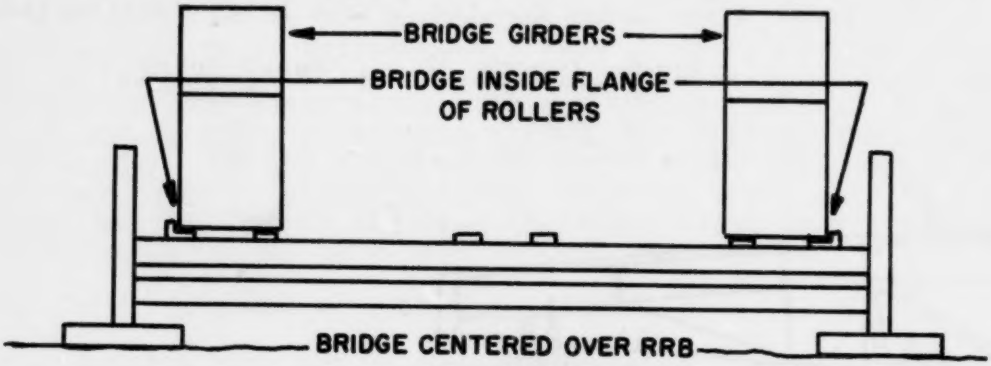


NO GOOD



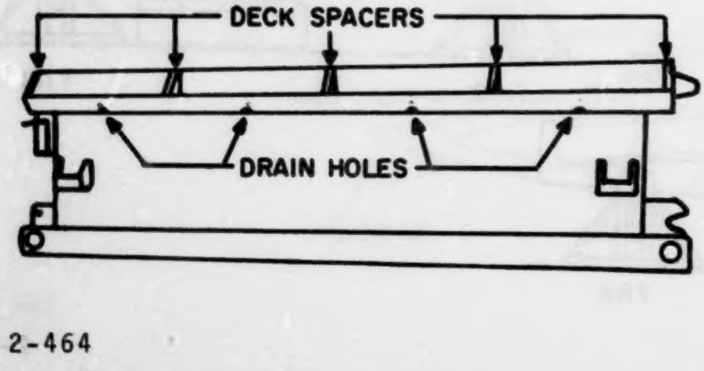
GOOD

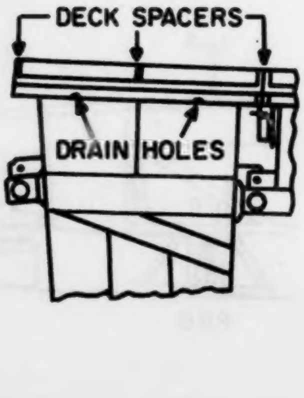
(b) Center roller beam under bridge so bridge will rest on outer rollers



NOTE

The panel point code is used to identify the location of the center of gravity (CG) and also also to identify boom and launch points of the bridge. The panel point code uses the deck spacers and drain holes in top and junction panels.





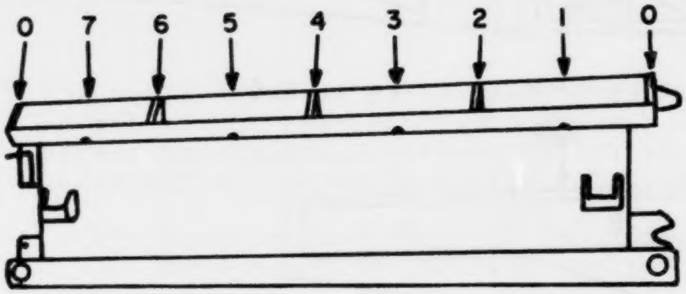
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

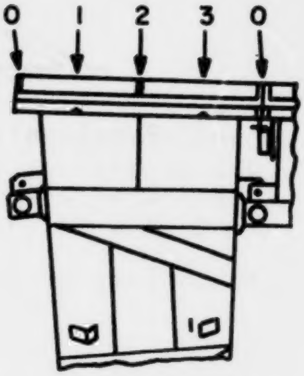
Step 2.a. Assembly Procedures (Cont).

NOTE

Panel point codes start at the front end (end closest to far bank) of top panels in bridge bay this is panel point 0. From this point, the deck spacers are panel points 2, 4 and 6. Panel points 1, 3, 5 and 7 are the drain holes halfway between each deck spacer. The deck spacer at the rear of the top panel becomes panel point 0 of the next top panel.

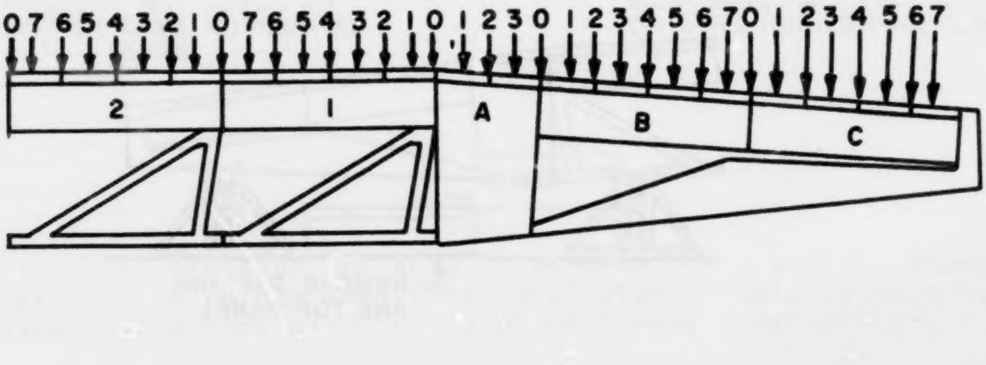
Panel point codes start at gap end of junction panels, this is panel point 0. From this point the deck spacer is point 2. Panel points 1 and 3 are halfway between deck spacers. The deck spacer at the bank end of the junction panel becomes panel point 0 of the top panel.





Top panels in the bays of bridge are numbered 1, 2, 3, 4, etc., starting with the top panel next to the far bank junction panel.

The junction and top panels in the ends of the bridge are lettered A, B, anc C (far bank end of bridge) and D, E, and F (near bank end of bridge). The panel points (1, 2, 3, 4, etc) run down the junction panel to the bankseat beam.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

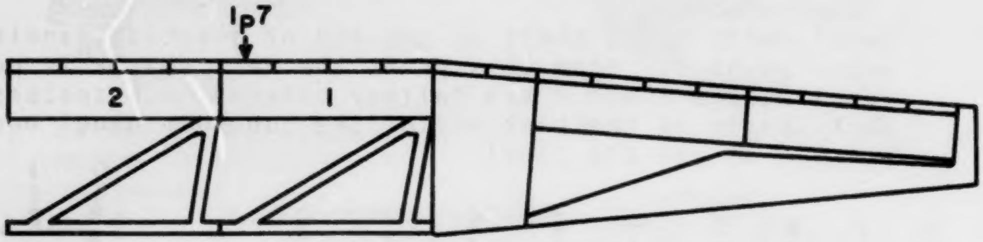
Step 2.a. Assembly Procedures (Cont).

NOTE (Cont).

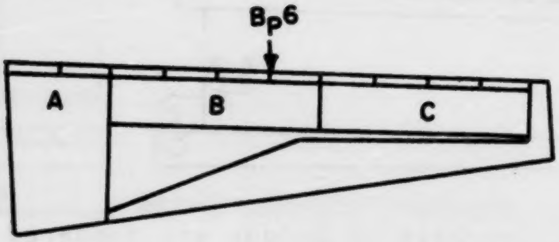
Panel point codes are given in the following order: panel number or letter, the letter "p" for panel point and the panel point number.

EXAMPLES

Panel point 7 of the first bay is give as 1p7.



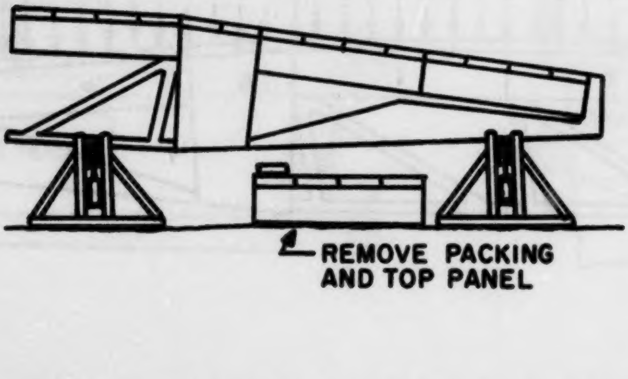
Panel point 6 of top panel B is given as Bp6.



⑯ Jack up front and rear roller beams.

(a) Raise roller beams high enough to remove packing and top panels from under the end taper panels. Ensure roller catch is engaged (roller locked).

(b) Move top panels to rear of bridge for use as second bay top panels.

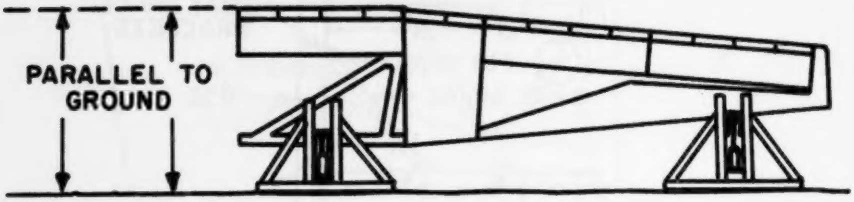


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

⑰ Adjust the height and level of the front and rear roller beams.

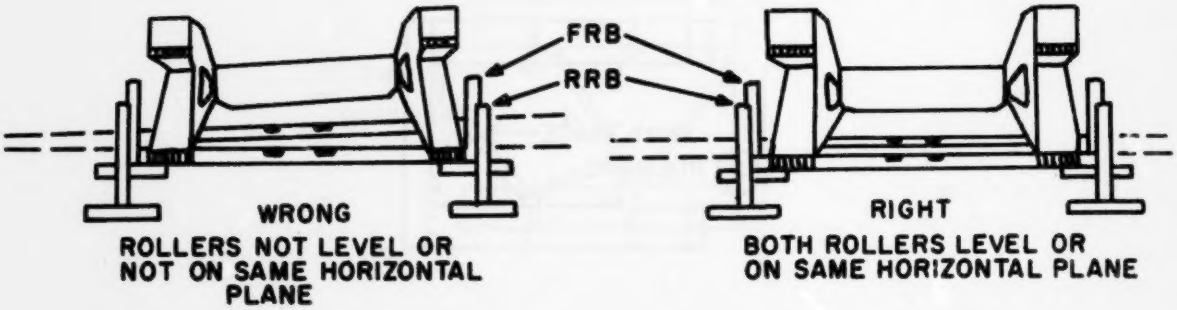
(a) Adjust the height of the roller beams so the top panels are as parallel to the ground as possible.



NOTE

The NCOIC and side party leaders must continually monitor the height of the rear bridge to prevent difficulty in lifting top panels into place. Failure to "think ahead" will slow bridge construction and could create safety hazards for the work party.

(b) Level roller beams at the adjusted height so girders of bridge are on the same horizontal plane.


FRB
RRB
WRONG
ROLLERS NOT LEVEL OR NOT ON SAME HORIZONTAL PLANE
RIGHT
BOTH ROLLERS LEVEL OR ON SAME HORIZONTAL PLANE

NOTE

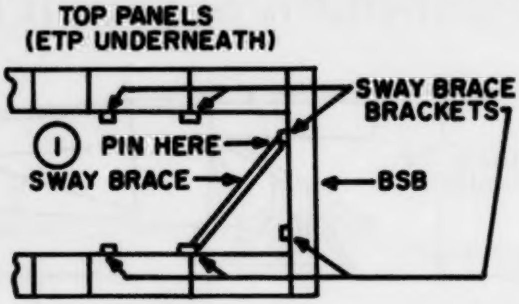
The roller beams do not have to be levelled exactly. However, they must be on the same horizontal plane. Getting both roller beams on the same plane or level will ease construction.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

⑱ Pin sway brace to bankseat beam and end taper panel.

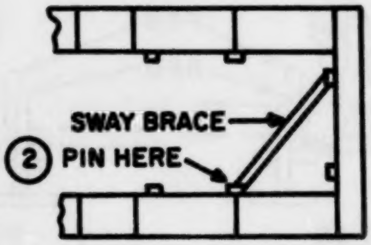
(a) Put one end of the sway brace into sway brace bracket on bankseat beam (does not matter which one).



(b) Put other end of sway brace bracket on end taper panel (one closest to bankseat beam).

(c) Insert bracing pin through hole in bracket and sway brace on bankseat beam. Put a retainer clip through this bracing pin.

(d) Insert bracing pin in hole in bracket and sway brace on end taper panel. Put a retainer clip through this bracing pin.



NOTE

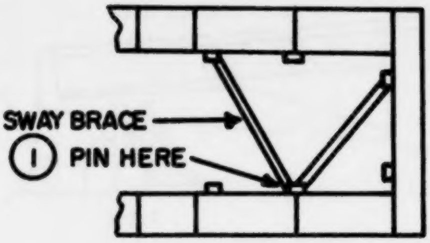
To prevent problems pinning sway braces, always pin the end of the brace that is closest to the gap first, then the other end.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont)

Step 2.a. Assembly Procedures (Cont).

⑲ Pin sway brace to end taper panels.

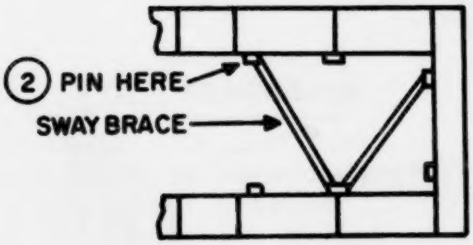
(a) Put one end of sway brace in middle sway brace bracket of end taper panel.



(b) Put other end of brace in bracket near the junction panel end of the other end taper panel.

(c) Insert bracing pin through hole in bracket and sway brace at middle bracket. Put a retainer clip through this pin.

(d) Insert bracing pin through hole in bracket and sway brace in the other end taper panel.



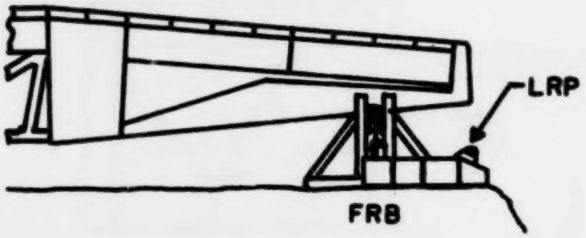
NOTE

Sway bracing must be placed in so that it forms a zig-zag pattern.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

⑳ Position extended jack in landing roller pedestal and place closed landing roller pedestal and landing roller in front of front roller beam.



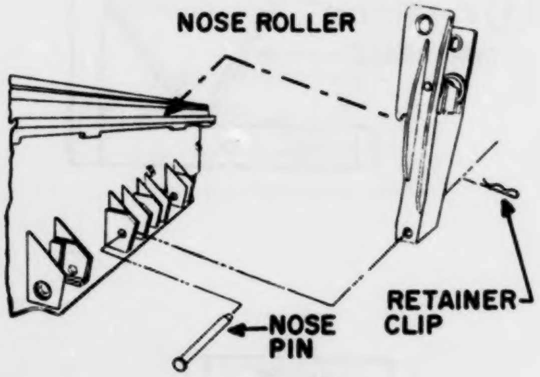
NOTE

The MK1 landing roller pedestal is used when constructing 2E + 1 through 2E + 12 Bay bridges.

㉑ Pin nose roller to bankseat beam.

(a) Hook nose roller on bankseat beam rail.

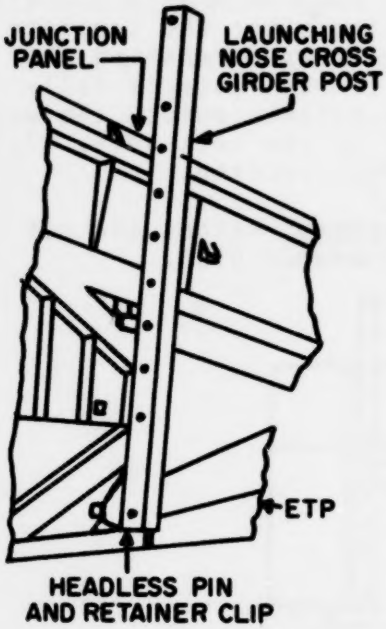
(b) Push launching nose pin through bracket and bottom of nose roller. Nose roller is in place. Put retainer clip through nose pin.



㉒ Fit nose cross girder post to junction panel.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

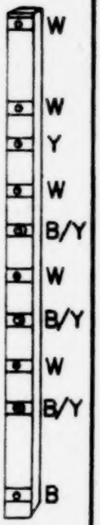
Step 2.a. Assembly Procedures (Cont).


JUNCTION PANEL
LAUNCHING NOSE CROSS GIRDER POST
ETP
HEADLESS PIN AND RETAINER CLIP

WHITE STRIPE (FOR MULTI-SPAN BRIDGES)
HOLES NUMBERED 3,5,7,9 AND 10
(FROM BOTTOM UP)
HIGH POSITION 8 - BETWEEN HOLES 9 AND 10
HIGH MID POSITION 7 - BETWEEN HOLES 7 AND 9
LOW MID POSTION 5 - BETWEEN HOLES 5 AND 7
LOW POSITION 3 - BETWEEN HOLES 3 AND 5

YELLOW STRIPE (FOR SINGLE SPAN DS BRIDGES)
HOLES NUMBERED 2,4,6 AND 8
(FROM BOTTOM UP)
HIGH POSITION 6 - BETWEEN HOLES 6 AND 8
MID POSITION 4 - BETWEEN HOLES 4 AND 6
LOW POSITION 2 - BETWEEN HOLES 2 AND 4

BLACK STRIPE (FOR SINGLE SPAN SS BRIDGES)
HOLES NUMBERED 1,2,4 AND 6
(FROM BOTTOM UP)
HIGH POSITION 4 - BETWEEN HOLES 4 AND 6
MID POSITION 2 - BETWEEN HOLES 2 AND 4
LOW POSITION 1 - BETWEEN HOLES 1 AND 2



NOTE

Use headless panel pin to connect nose cross girder posts to junction panels and place retainer clips through both ends of the pin (inside retainer clip will be placed on the inside of nose cross girder post to keep nose cross girder post from slipping off headless pin, and to keep pin from working out of the hole).

WARNING

Before work party removes captive pins to change heights, a panel pin must be placed through nose roller and launching nose to prevent nose from rolling.

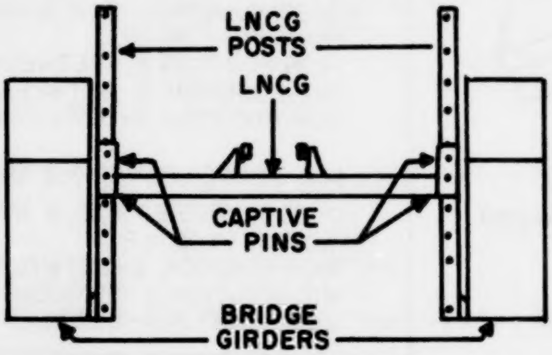
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

NOTE

It is easier to construct the launching nose in middle position. Place nose cross girder in desired setting after the complete nose is constructed (prevents very high lifts or pushing the nose "uphill" during construction). After the nose is fully constructed and then pulled back to the balance point, the work party removes and replaces captive pins in the next hole. This continues until the nose is at the desired setting.

㉓ Pin nose cross girder to post at correct height and put retainer clips through the end of captive pins.

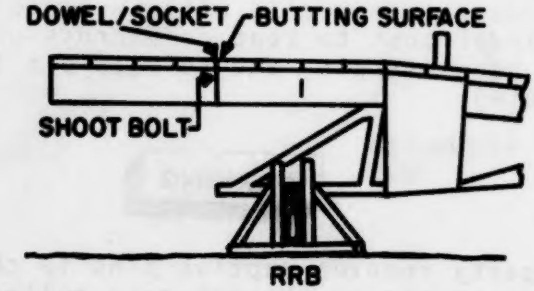


For 2E + 1 bay bridge, PROCEED TO STEP 2.a ㉖.

㉔ Pin bay 2 to end of bay 1.

(a) Engage dowels and sockets of both top panels.

(b) When butting surfaces contact each other, lift shoot bolts and turn handle to left to lock shoot bolts.



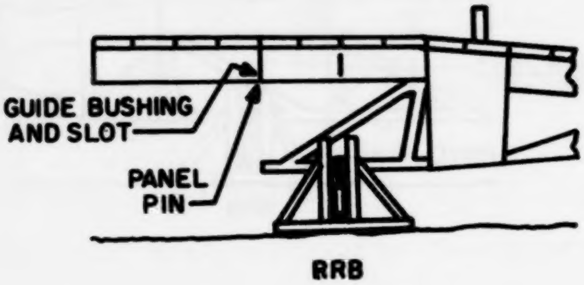
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(c) Let rear of top panel down, guide bushings and slots will line up pin jaws.

(d) Insert panel pin through jaws until shoulder of pin butts against pin jaw.

(e) Do not put retainer clip through this panel pin.

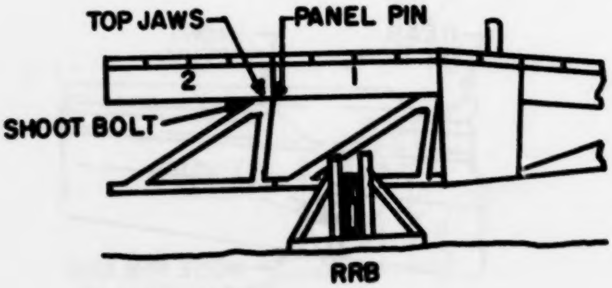


NOTE

Retainer clips are to be put through all panel pins after they are put in place. There is an exception, however. Beginning with bay two, panel pins holding top panels together need not be pinned with retainer clips because the bottom panel jaws will prevent the panel pin from moving.

(f) Put top jaws of bottom panel around panel pin connecting top panels.

(g) Close and lock shoot bolts.

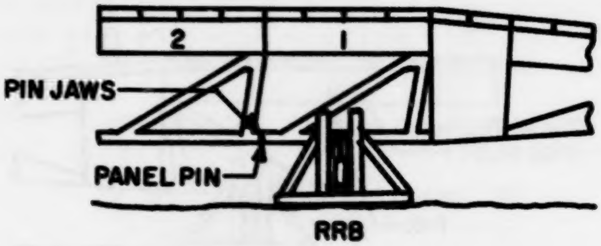


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

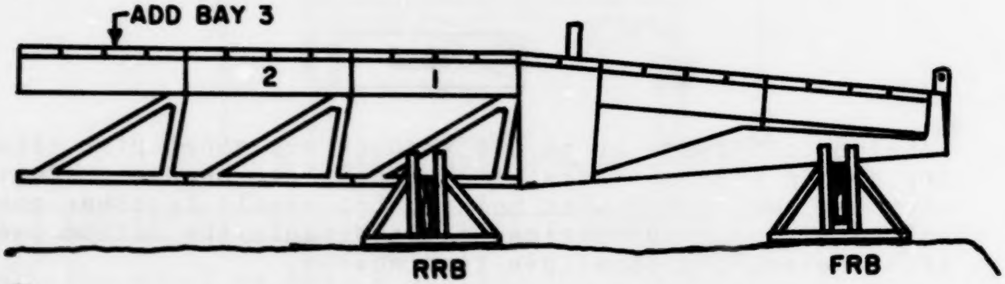
Step 2.a. Assembly Procedures (Cont).

(h) Lower rear end of panel allowing lower panel jaws to fit into lower jaws on other bottom panel. Then push panel pin through jaws.

(i) Put retainer clip through the end of panel pin in lower jaws.



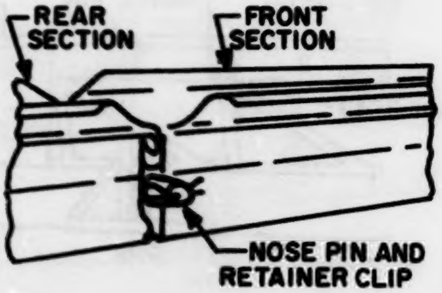
㉕ Pin bay 3 to end of bay 2



㉖ Pin front and rear sections of light nose together.

(a) Use nose pin to join to join the two sections together.

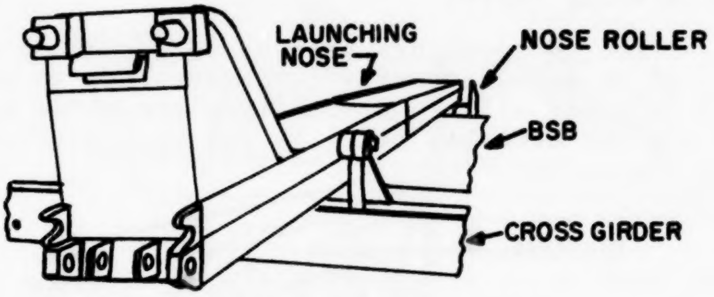
(b) Put retainer clip through the end of nose pin.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

㉗ Place front end of light nose section on nose roller and rear end on nose cross girder. Rear of nose section should extend about 2 ft (0.61 m) behind cross girder.



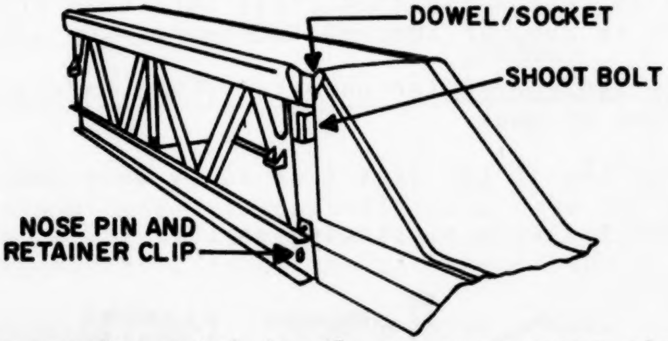
㉘ Pin first heavy nose section to end of light nose section.

(a) Fit sockets of heavy nose onto dowels of light nose on nose cross girder.

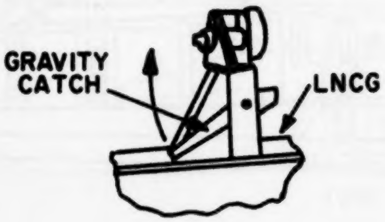
(b) Lift and push shoot bolts through dowels and turn handles to locked position.

(c) Push nose pin through jaws of nose sections.

(d) Put retainer clip through the end of nose pin.



㉙ Raise gravity catch handle on nose cross girder.



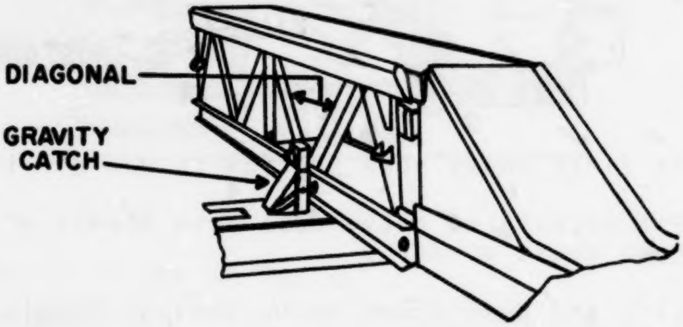
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

㉚ Push nose forward about 5 ft (1.5 m).

(a) Align first diagonal (V in heavy nose section) with gravity catch.

(b) Place carrying bar through nose section either in front of or behind gravity catch (depends on slope of nose). This bar will hold nose in place while the landing roller pedestal (LRP) is put on tip of nose.



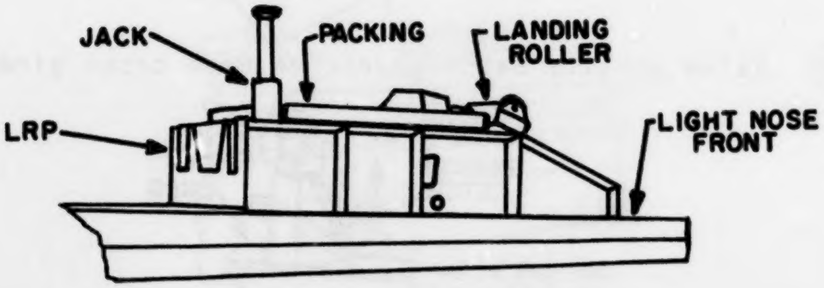
NOTE

A 5,000 lb. cargo tie-down strap is placed around the pedestal and nose to keep it secured to the nose.

㉛ Put landing roller pedestal (LRP) and landing roller on front of nose.

(a) Put one 15 ton jack (ram fully extended) in LRP.

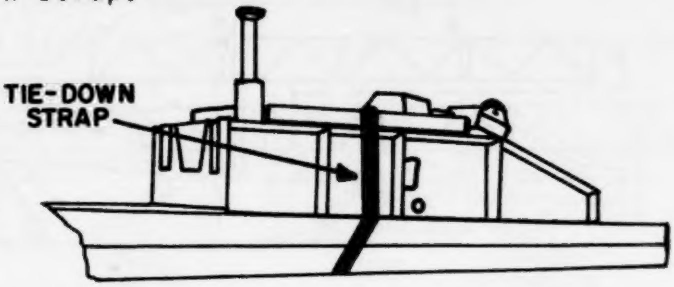
(b) Put 2 pieces of packing on LRP.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

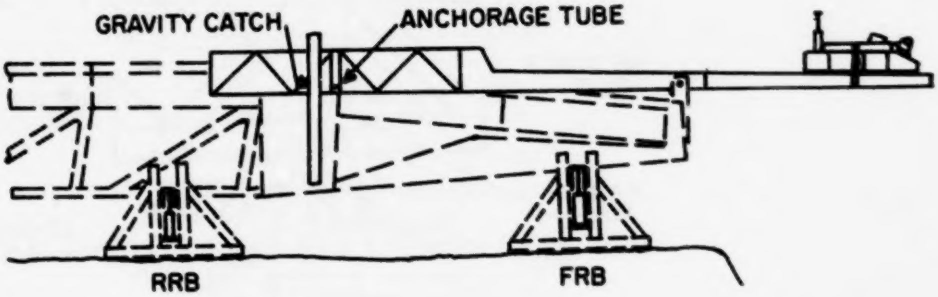
Step 2.a. Assembly Procedures (Cont).

(c) Secure LRP to the tip of light nose with the cargo tie-down strap.

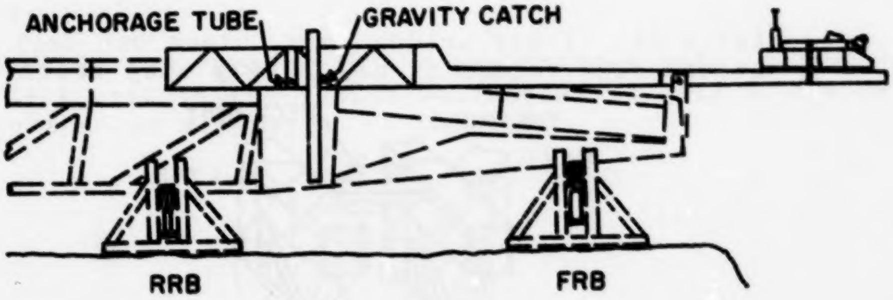


㉜ Lift gravity catch remove carrying bar and push nose forward until anchorage tube in first nose section is next to gravity latch.

(a) If tip of nose is uphill, move nose forward until anchorage tube is in front of gravity catch, put carrying bar through the anchorage tube.



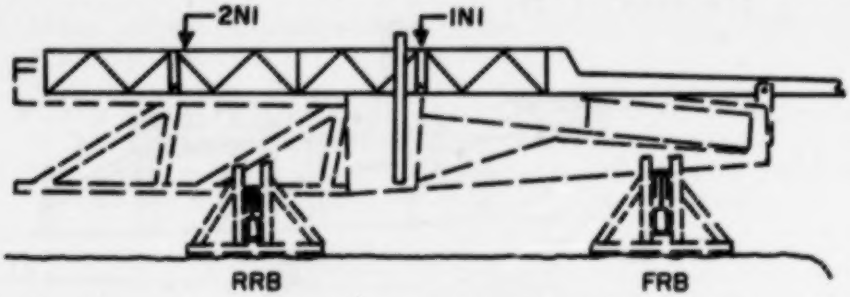
(b) If tip of nose is downhill, move nose to the rear until anchorage tube is to the rear of gravity catch, and put carrying bar through the anchorage tube.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

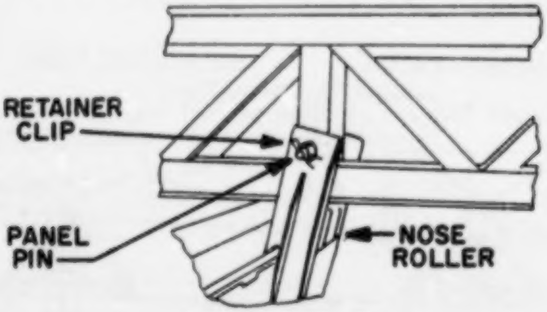
(33) Pin second heavy nose section to first heavy nose section.



(34) Lift gravity catch, remove carrying bar, and push nose forward until anchorage tube in first heavy nose section is aligned with anchorage holes in nose roller.

(a) Insert panel pin through anchorage holes and tube.

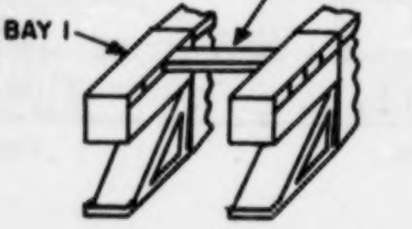
(b) Put retainer clip through the end of panel pin.



NOTE

Do not remove this pin until another nose section is attached and the nose crew has "hands on" the nose to prevent it from rolling.

(c) For a 2E + 1 bay bridge only, place one deck unit in the second deck recess of bay 1. Pin sway brace in Bay 1.

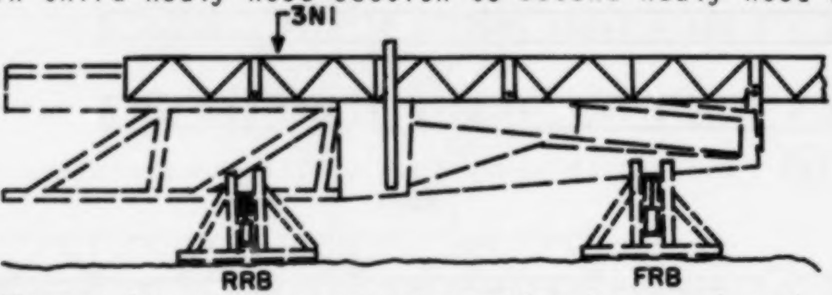


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

For 2E + 1 bay bridge, PROCEED TO STEP 2.a. (65).

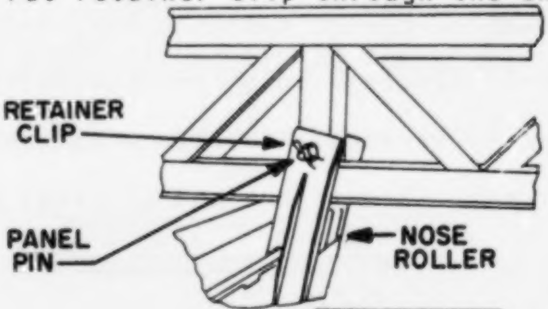
㉟ Pin third heavy nose section to second heavy nose section.



㊱ Lift gravity catch, remove carrying bar, and push nose forward until anchorage tube in second heavy nose section is aligned with anchorage holes in nose roller.

(a) Insert panel pin through anchorage holes and and tube.

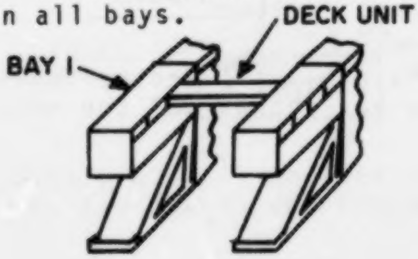
(b) Put retainer clip through the end of panel pin.



NOTE

Do not remove this pin until another nose section is attached and the nose crew has "hands on" the nose to prevent it from rolling.

(c) For 2E + 2 through 2E + 4 bay bridges only, place one deck unit in the second deck recess of bay 1. Pin sway braces in all bays.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

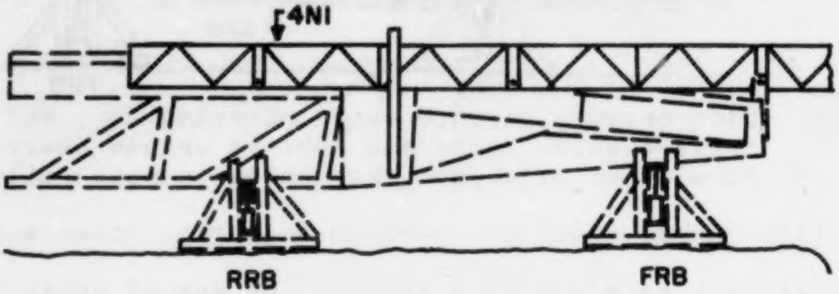
Step 2.a. Assembly Procedures (Cont).

For 2E + 2 bay bridge, PROCEED TO STEP 2.a. (65).

For 2E + 3 bay bridge, PROCEED TO STEP 2.a. (45).

For 2E + 4 bay bridge, PROCEED TO STEP 2.a. (43).

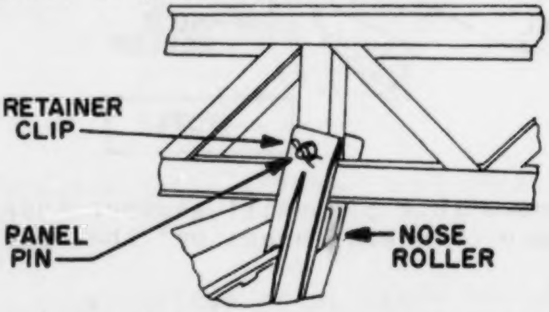
(37) Pin fourth heavy nose section to third heavy nose section.



(38) Lift gravity catch, remove carrying bar, and push nose forward until anchorage tube in third heavy nose section is aligned with anchorage holes in nose roller.

(a) Insert panel pin through anchorage holes and tube.

(b) Put retainer clip through the end of panel pin.



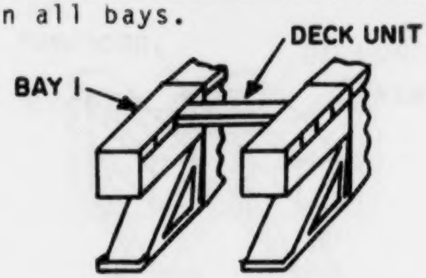
NOTE

Do not remove this pin until another nose section is attached and the nose crew has "hands on" the nose to prevent it from rolling.

2-25. ASSEMBLY- DOUBLE STORY- 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

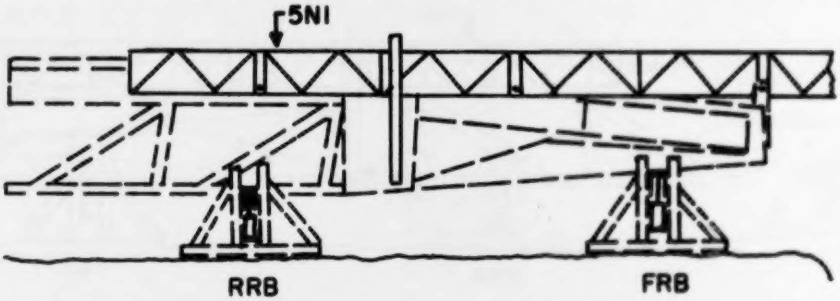
Step 2.a. Assembly Procedures (Cont).

(c) For 2E + 5 through 2E + 7 bay bridges only, place one deck unit in the second deck recess of bay 1. Pin sway braces in all bays.



For 2E + 5 thru 2E + 7 bay bridges, PROCEED TO STEP 2.a. (43).

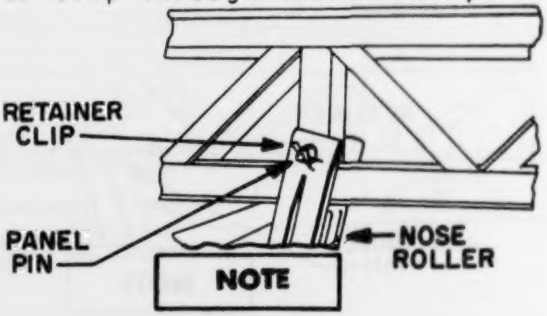
(39) Pin fifth heavy nose section to fourth heavy nose section.



(40) Lift gravity catch, remove carrying bar, and push nose forward until anchorage tube in fourth heavy nose section is aligned with anchorage holes in nose roller.

(a) Insert panel pin through anchorage holes and tube.

(b) Put retainer clip through the end of panel pin.



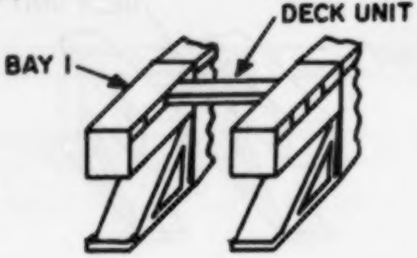
NOTE

Do not remove this pin until another nose section is attached and the nose crew has "hands on" the nose to prevent it from rolling.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

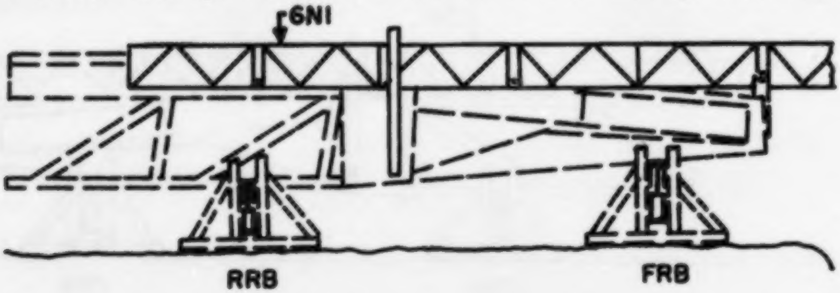
Step 2.a. Assembly Procedures (Cont).

(c) For 2E + 8 through 10 bay bridges only, place one deck unit in the second deck recess of bay 1. Pin sway braces in all bays.



For 2E + 8 thru 2E + 10 bay bridges, PROCEED TO STEP 2.a. ㊸.

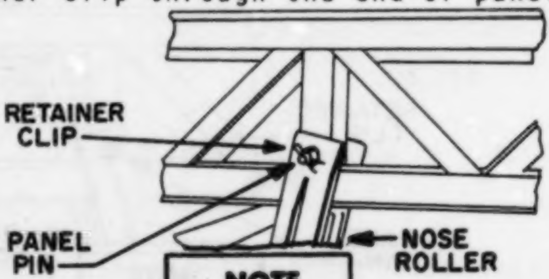
㊶ Pin sixth heavy nose section to fifth heavy nose section.



㊷ Lift gravity catch, remove carrying bar, and push nose forward until anchorage tube in fifth heavy nose section is aligned with anchorage holes in nose roller.

(a) Insert panel pin through anchorage holes and tube.

(b) Put retainer clip through the end of panel pin.



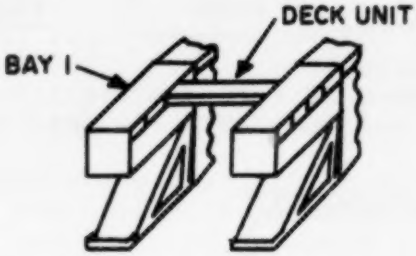
NOTE

Do not remove this pin until another nose section is attached and the nose crew has "hands on" the nose to prevent it from rolling.

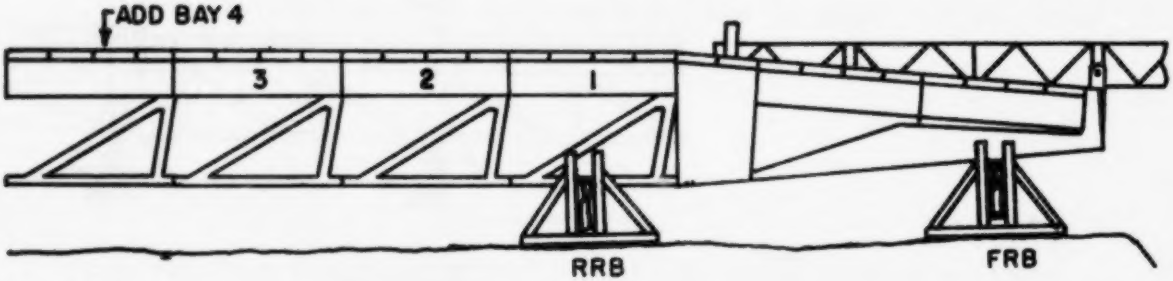
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(c) For 2E + 11 and 2E + 12 bay bridges only, place one deck unit in the second deck recess of Bay 1. Pin sway braces in all bays.

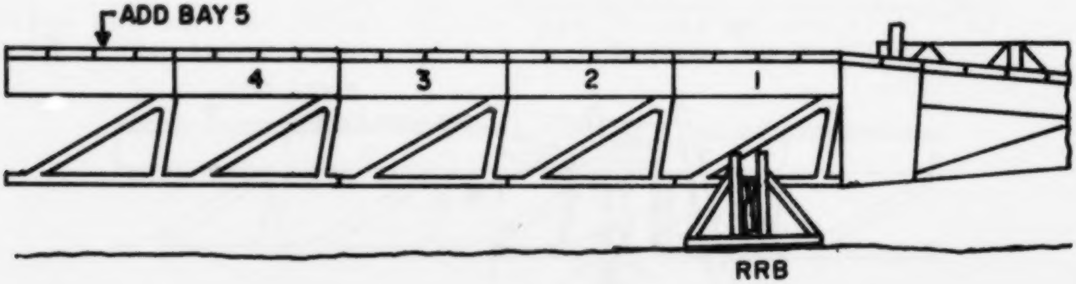


㊸ Pin Bay 4 to end of Bay 3. Pin sway brace in Bay 4.



For 2E + 4 thru 2E + 7 bay bridges, PROCEED TO STEP 2.a. ㊺ .

㊹ Pin Bay 5 to end of Bay 4. Pin sway brace in Bay 5.

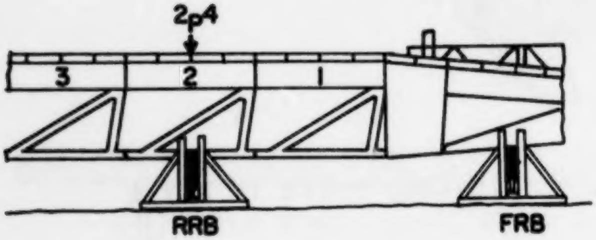


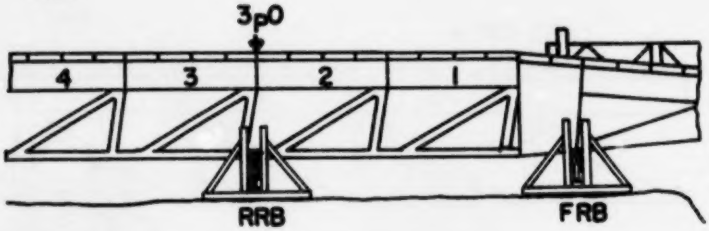
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

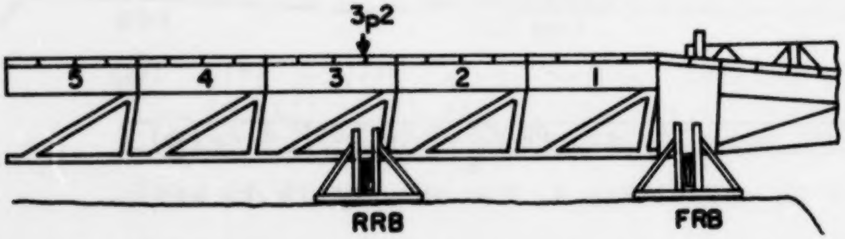
Step 2.a. Assembly Procedures (Cont).

㊺ Boom bridge to panel point given below for bridge being constructed.

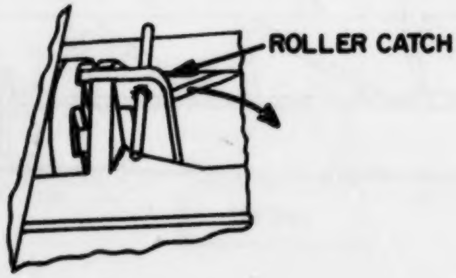
Bridge	Boom to
2E + 3	2p4 (over RRB)
2E + 4 thru 2E + 7	3p0 (over RRB)
2E + 8 thru 2E + 10	3p2 (over RRB)
2E + 11 and 2E + 12	3p0 (over RRB)







(a) Have one person at each roller catch to lock and unlock rollers on command.



(b) The rest of work party will position themselves at the sides of the bridge to push the bridge as directed by NCOIC.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(c) Unlock roller catches.

NOTE

May require slight movement of bridge away from gap, then toward gap to release all catches.

(d) Boom bridge toward gap until required panel point is over center of rear roller beam, stop boom.

CAUTION

Do not lock rollers while bridge is being boomed. Locking rollers during booming can cause bridge to skew and/or break roller catches.

(e) Lock roller catches.

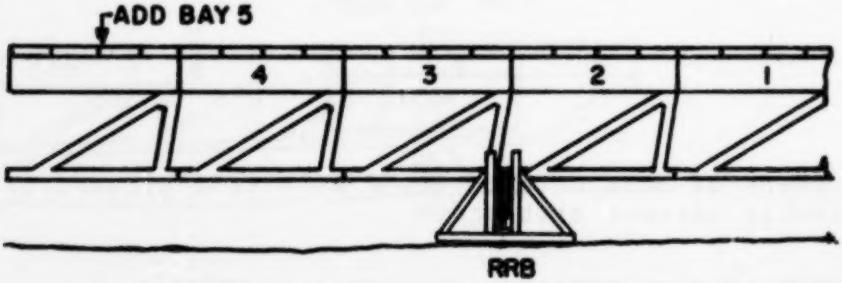
NOTE

May require slight movement of bridge away from gap, then toward gap to lock all catches.

For 2E + 3 and 2E + 4 bay bridges, PROCEED TO STEP 2.a. (65).

For 2E + 8 thru 2E + 12 bay bridges, PROCEED TO STEP 2.a. (47).

(46) Pin Bay 5 to end of Bay 4. Pin sway brace in Bay 5.

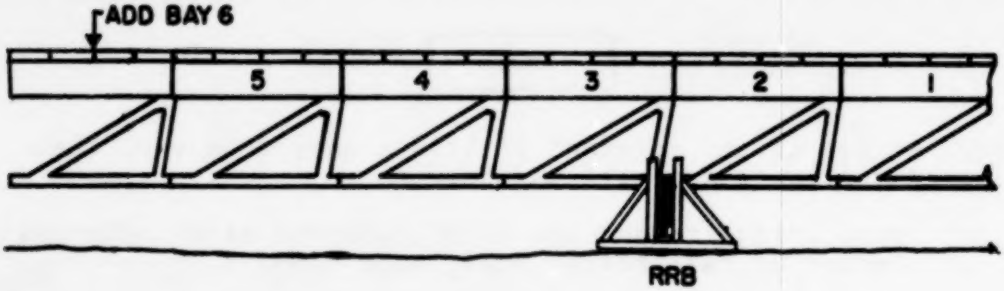


For 2E + 5 bay bridge, PROCEED TO STEP 2.a. (65).

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

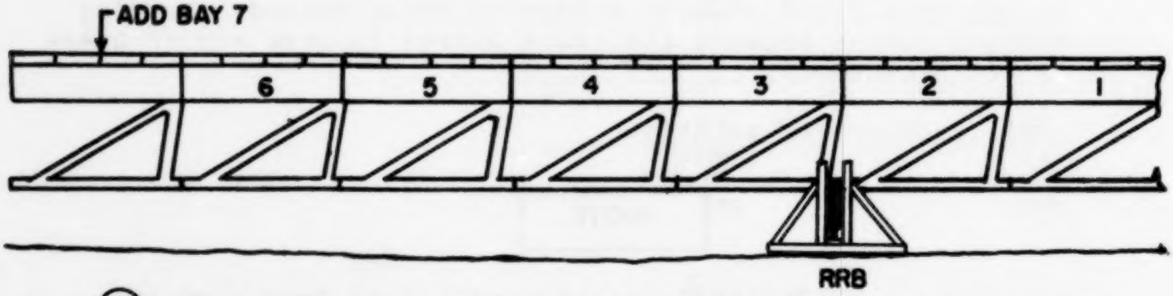
Step 2.a. Assembly Procedures (Cont).

(47) Pin Bay 6 to end of Bay 5. Pin sway brace in Bay 6.

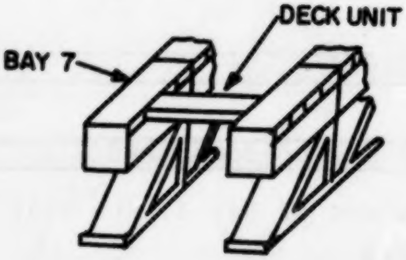


For 2E + 6 bay bridge, PROCEED TO STEP 2.a. (51) .

(48) Pin Bay 7 to end of Bay 6. Pin sway brace in Bay 7.



(49) Place one deck unit in the third deck recess of Bay 7.



NOTE

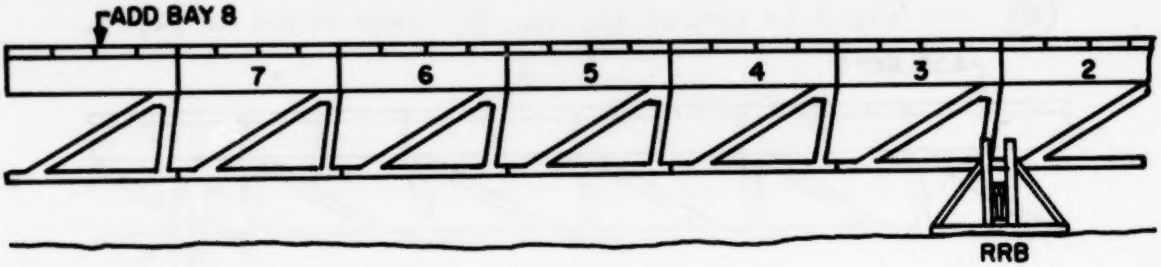
Placement of deck unit in Bay 7 will keep girders of bridge spaced at correct distance.

For 2E + 7 bay bridge, PROCEED TO STEP 2.a. (51) .

(50) Pin Bay 8 to end of Bay 7. Pin sway brace in bay 8.

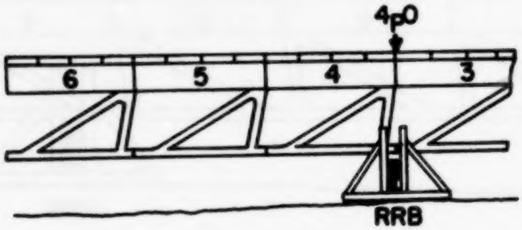
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

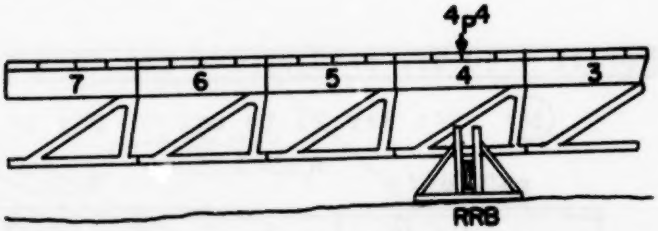
Step 2.a. Assembly Procedures (Cont).

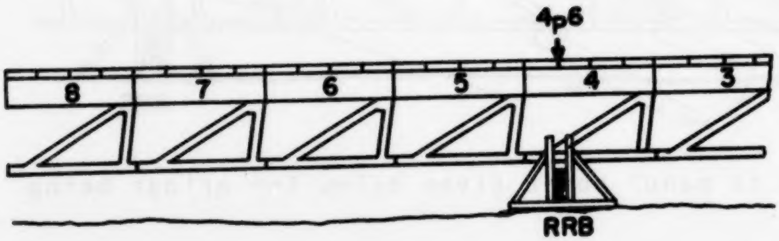


(51) Boom bridge to panel point given below for bridge being constructed.

Bridge Length	Panel Point
2E + 6	4p0
2E + 7	4p4
2E + 8 thru 2E + 10	4p6
2E + 11 and 2E + 12	4p4





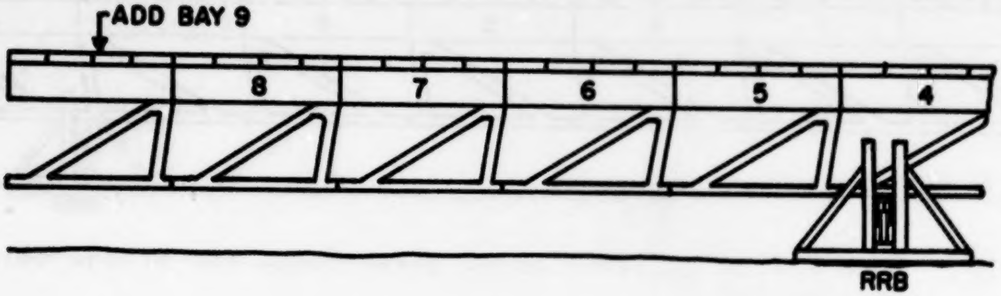


For 2E + 6 thru 2E + 8 bay bridges, PROCEED TO STEP 2.a. (65).

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

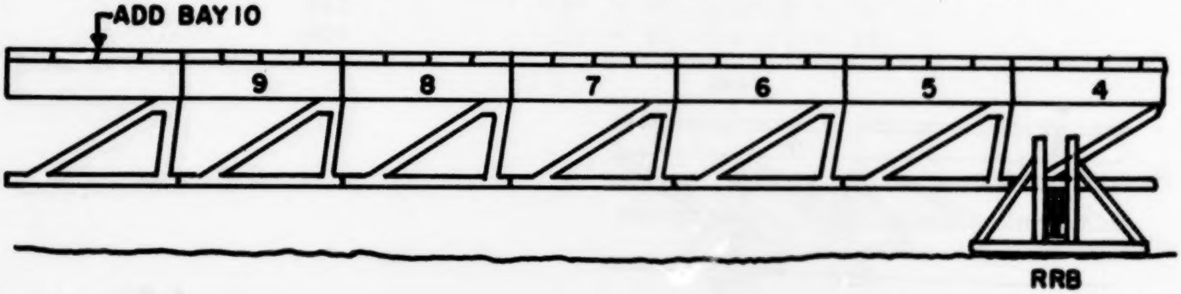
Step 2.a. Assembly Procedures (Cont).

(52) Pin Bay 9 to end of Bay 8. Pin sway brace in Bay 9.



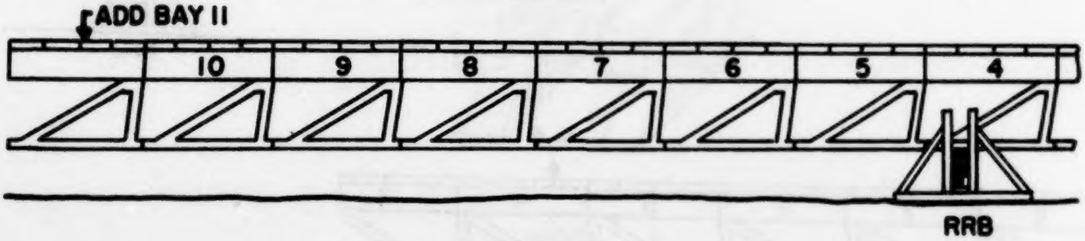
For 2E + 9 bay bridge, PROCEED TO STEP 2.a. (65) .

(53) Pin Bay 10 to end of Bay 9. Pin sway brace in Bay 10.



For 2E + 10 bay bridge, PROCEED TO STEP 2.a. (65) .

(54) Pin Bay 11 to end of Bay 10 Pin sway brace in Bay 11.



(55) Boom bridge to panel point given below for bridge being constructed.

Bridge Length	Boom To
2E + 11 and 2E + 12 bay	6pl (over RRB)

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

NOTE

Booming of double story bridges by manpower alone is allowed until 9 bays have been assembled. At 9 bays, the weight of the bridge has reached the point where booming by vehicle is required. The rule to follow is:

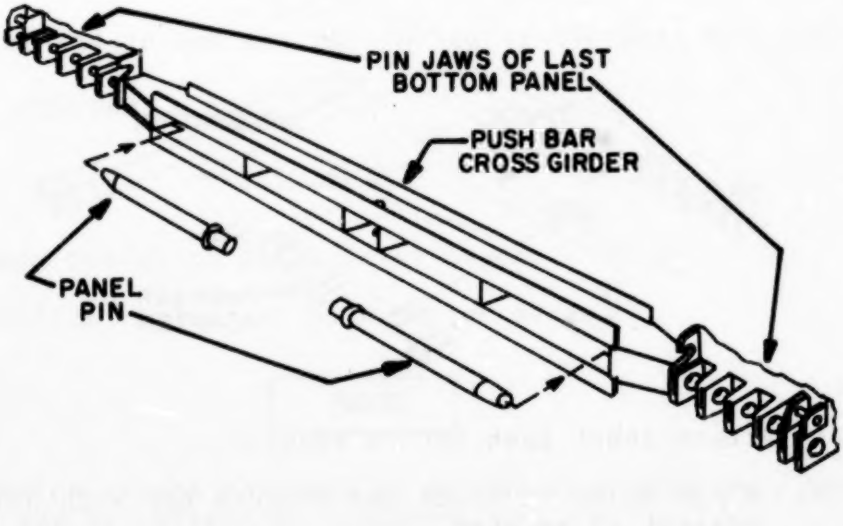
8 bays or less, boom by manpower,
9 bays or more, boom by vehicle.

(56) Pin the push bar cross girder to pin jaws of bottom panel.

(a) Hold cross girder to pin jaws of bottom panel.

(b) Insert panel pins in girder from inside of girder, and push until pins are fully seated in jaws of bottom panel.

(c) Do not put retainer clip through panel pins.



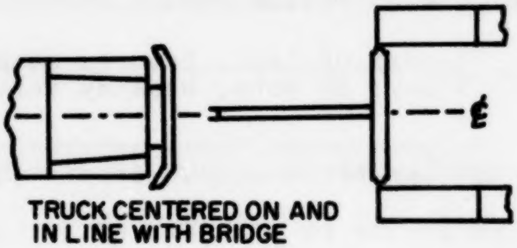
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(57) Move vehicle into position at rear of bridge.

(a) Front of vehicle should be about 20 feet (6.1 m) from rear of bridge.

(b) Ensure that vehicle is centered and straight with bridge.



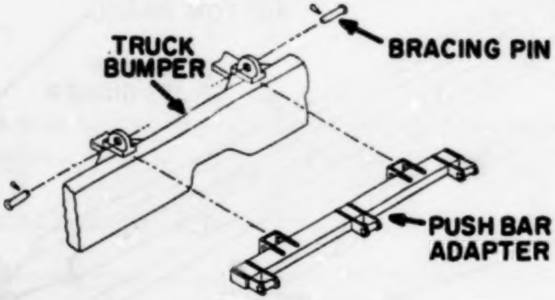
TRUCK CENTERED ON AND IN LINE WITH BRIDGE

(58) Attach push bar adapter to towing shackles of vehicle bumper.

(a) Position adapter on shackles; holes of adapter align with holes in shackles.

(b) Insert bracing pins through adapter and shackles.

(c) Put retainer clips through the end of bracing pins.



(59) Attach short push bar to adapter.

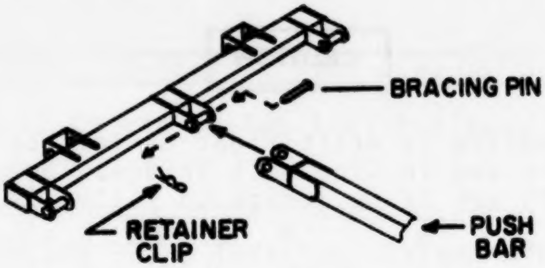
(a) Align holes in fixed end of push bar with hole in center bracket of adapter.

(b) Insert bracing pin in push bar and bracket.

(c) Put retainer clip through the end of bracing pin.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).



(60) Attach short push bar to cross girder.

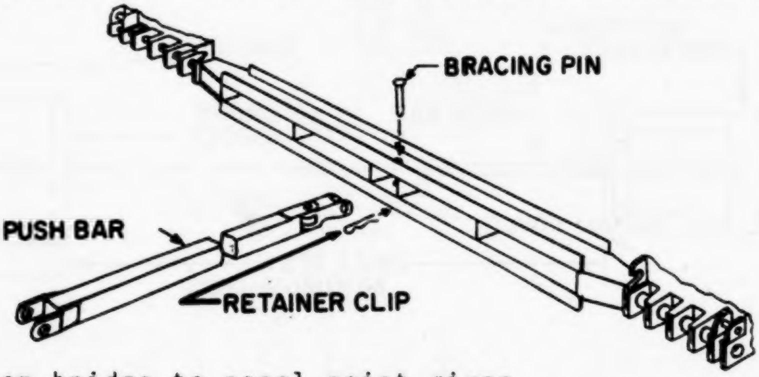
(a) Move vehicle toward bridge slowly.

(b) Guide end of push bar into opening of cross girder.

(c) Move push bar as needed to align holes in push bar and girder.

(d) Put bracing pin in girder until fully seated.

(e) Do not put retainer clip through the end of bracing pin.



(61) Boom bridge to panel point given.

(a) Unlock rollers of both roller beams.

NOTE

May require slight movement of bridge away from gap, then toward gap to release all catches.

(b) Move vehicle forward slowly, booming bridge to panel point given.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

CAUTION

Do not allow vehicle to drift right or left of centerline. Keep vehicle straight and in line with bridge. Movement of bridge to right or left can cause damage to roller beams.

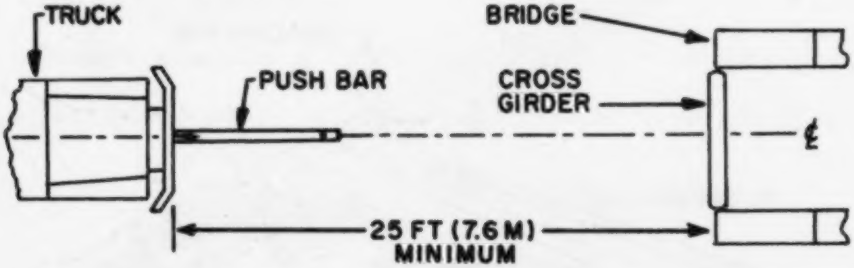
(c) Stop boom of bridge at panel point given.

(d) Lock roller catches.

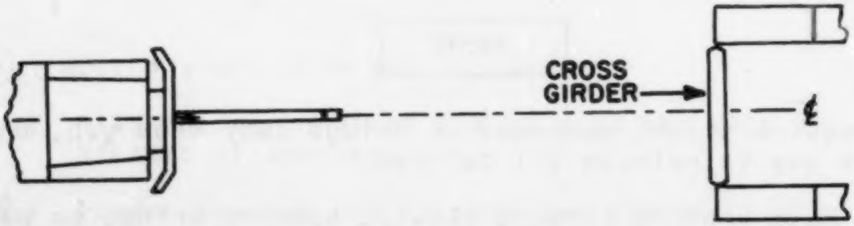
NOTE

May require slight movement of bridge away from gap, then toward gap to lock all catches.

(62) Remove push bar from cross girder and back vehicle straight back on centerline far enough to permit construction of at least three bays of bridge.



(63) Remove push bar cross girder from pin jaws of bottom panels, and place girder to side of site.

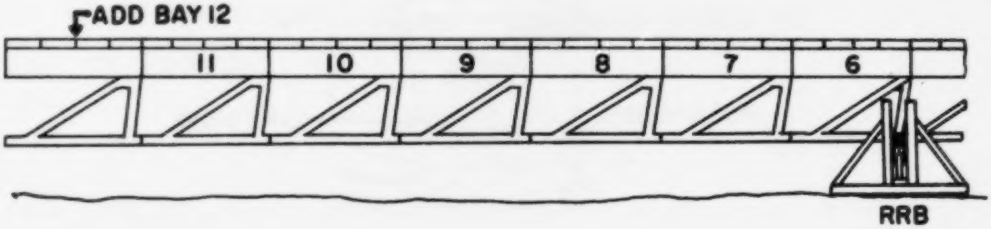


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

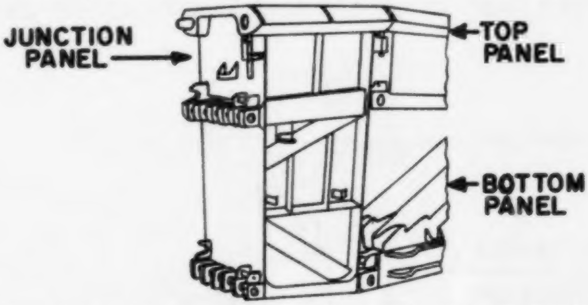
Step 2.a. Assembly Procedures (Cont).

For 2E + 11 bay bridge, PROCEED TO STEP 2.a. (65).

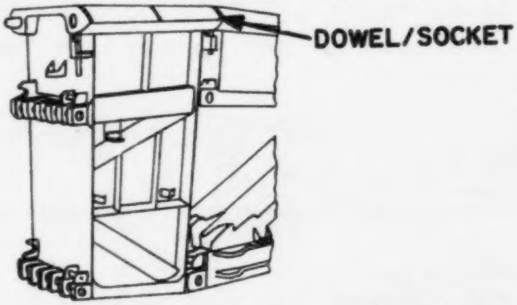
(64) Pin Bay 12 to end of Bay 11. Pin sway brace in Bay 12.



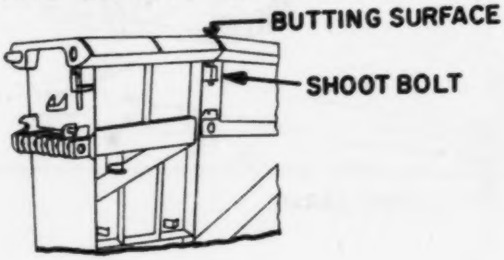
(65) Pin junction panel to top panel and bottom panel.



(a) Engage dowels and sockets of junction and top panel.



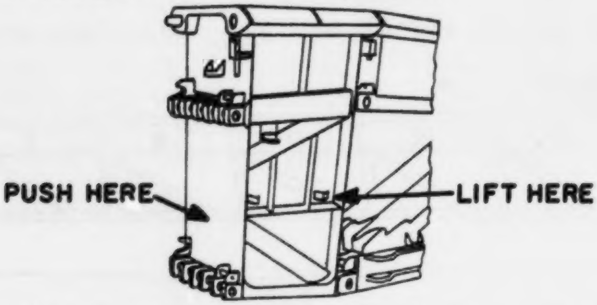
(b) When butting surfaces contact each other, lift shoot bolt and turn handle to left to lock shoot bolt.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

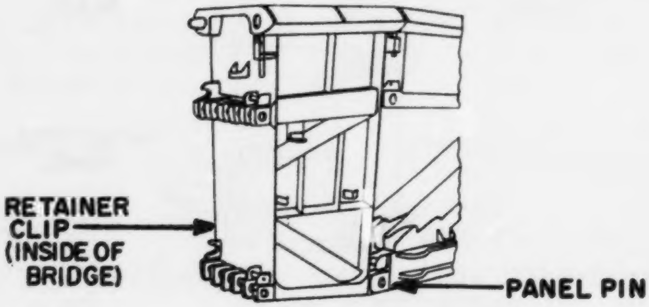
Step 2.a. Assembly Procedures (Cont).

(c) Two personnel, one on each side will lift the front of the junction panel, as two personnel, push the rear of panel forward toward the bottom panel.

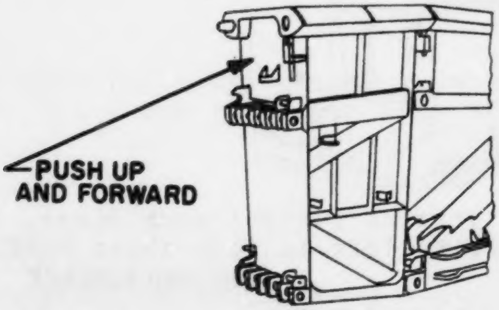


(d) When bushings are compressed, insert panel pin through the bottom pin hole until shoulder touches pin jaw.

(e) Put retainer clip through the end of panel pin.



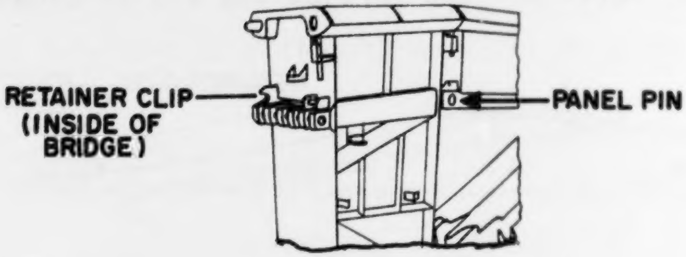
(f) Three men push up and forward on rear of junction panel.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

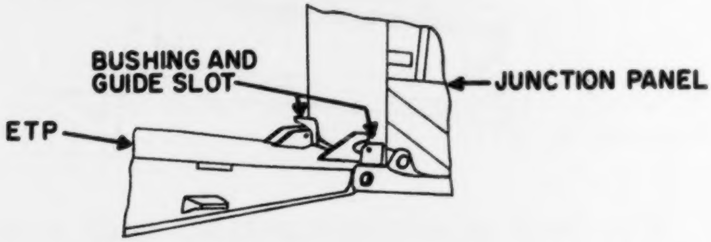
(g) When bushings are compressed, insert panel pin through the upper pin hole until shoulder touches pin jaws.



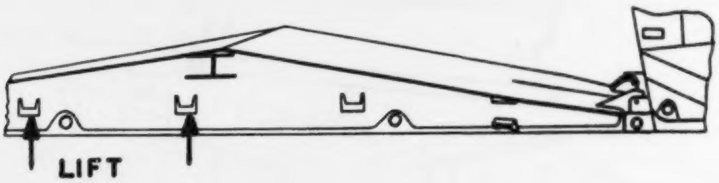
(h) Put retainer clip through the end of panel pin.

(66) Pin end taper panel to bottom of junction panel.

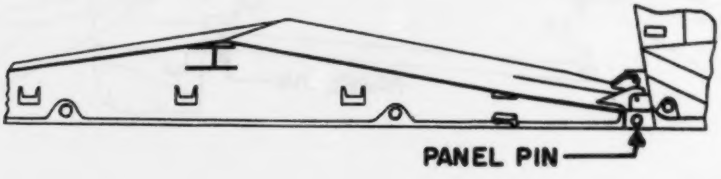
(a) Engage bushing and guide slots of end taper and junction panel.



(b) Lift bankseat beam end of end taper panel until bushings are compressed.



(c) Insert panel pin through pin jaws until shoulder touches pin jaws.

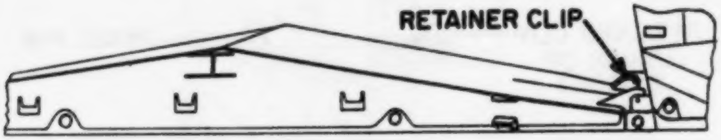


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

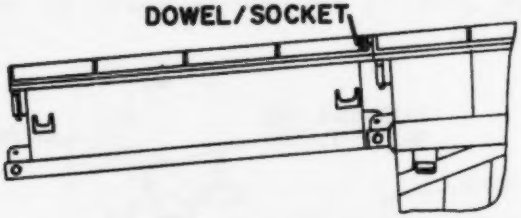
(d) Let end of panel down.

(e) Put retainer clip through the end of panel pin.

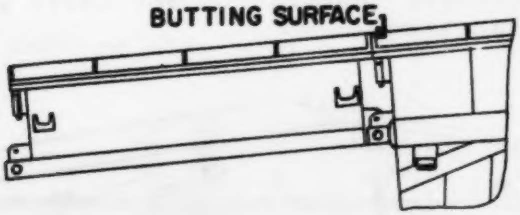


(67) Pin top panel to junction panel.

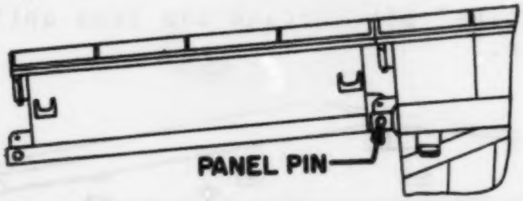
(a) Engage dowels and sockets of top and junction panel.



(b) When butting surfaces contact each other, lift shoot bolts and turn handle to left to lock.



(c) Insert panel pin through pin jaws until shoulder touches pin jaws.

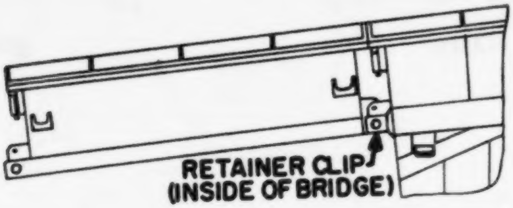


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(d) Insert panel pin through the jaws until shoulder touches jaws.

(e) Put retainer clip through the end of panel pin.



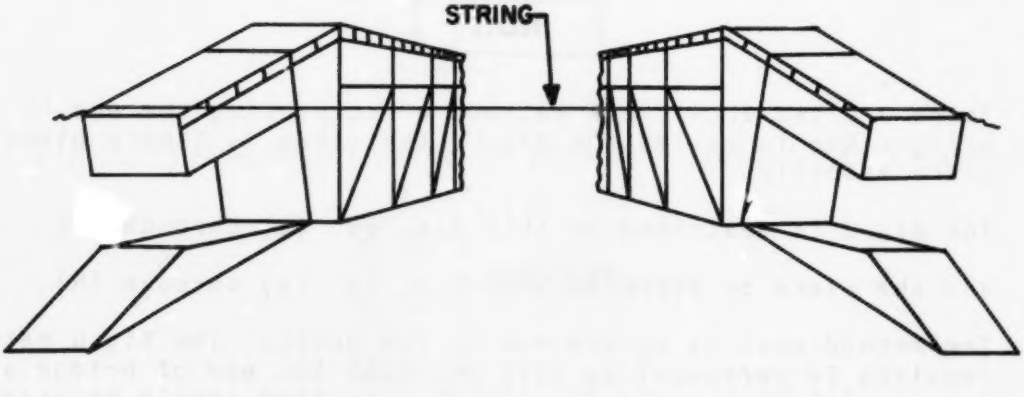
NOTE

To complete the end of bridge, it is necessary to get the two girders on the same level and to reduce the girder toe-in. The procedure of using the jacks in the roller beams and a piece of string to do this is described in:

Step 2.a. (68) (a) through (d).

(68) To reduce girder toe-in and level end of bridge.

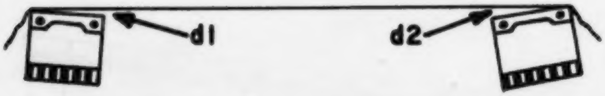
(a) Hold a piece of string across the same point of the top panels as shown.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(b) Check gaps at points d1 and d2. These gaps must be the same before girders are considered level.



(c) To increase gap at d1 lower RRB or raise FRB on that side of bridge.

(d) To decrease gap at d2 raise RRB or lower FRB on that side of bridge.

NOTE

Girders should now be on the same plane.

NOTE

There are two acceptable methods of completing the end of bridge. One is called the Big U, the other is simply piece by piece assembly.

The Big U is described in Step 2.a. 69 (a) through (i)

and the piece by piece in Step 2.a. 70 (a) through (h).

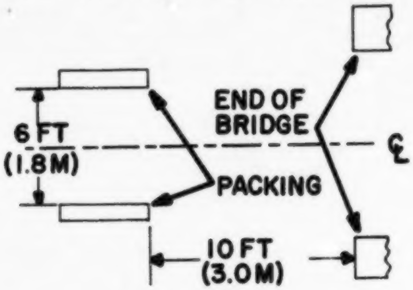
The method used is determined by the NCOIC. The Big U method requires 12 personnel to lift the 1330 lb. end of bridge at least waist high and walk with it. Caution should be used if this method is used.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

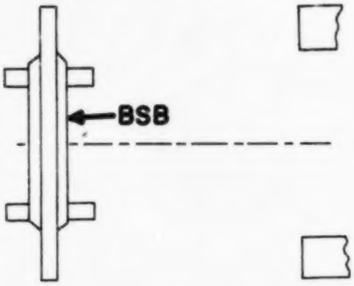
Step 2.a. Assembly Procedures (Cont).

(69) To complete the end of bridge using the Big U method.

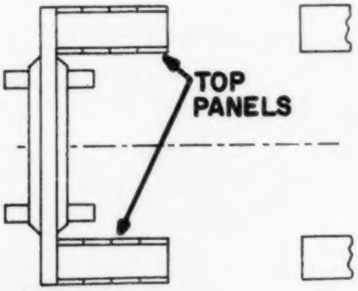
(a) Place 2 pieces of packing about 6 ft (1.8 m) apart, 10 ft (3.0 m) from the rear of the end taper panels.



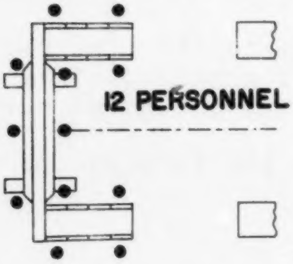
(b) Place the bankseat beam on the packing.



(c) Pin a top panel to each end of the bankseat beam.



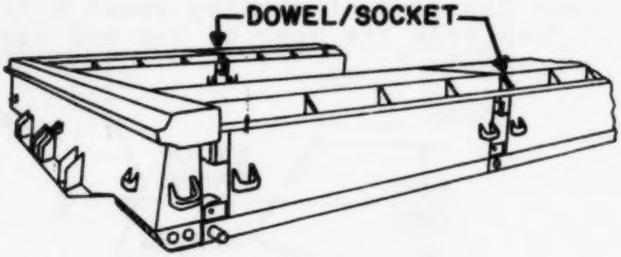
(d) Lift the Big U using 12 personnel positioned as shown.



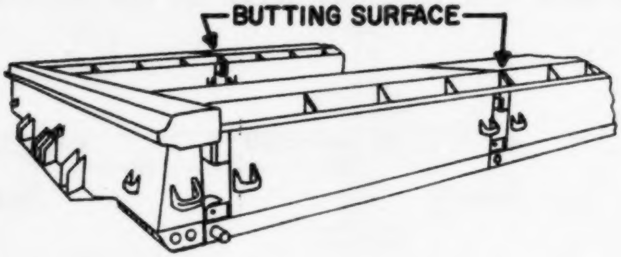
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

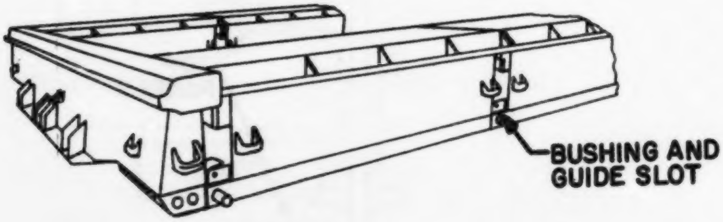
(e) Align the dowels and sockets of top panels in the Big U with those of top panels attached to junction panel.



(f) When butting surfaces contact each other, lift and turn shoot bolts to left to lock.



(g) Let the Big U down to engage bushings of top panel.



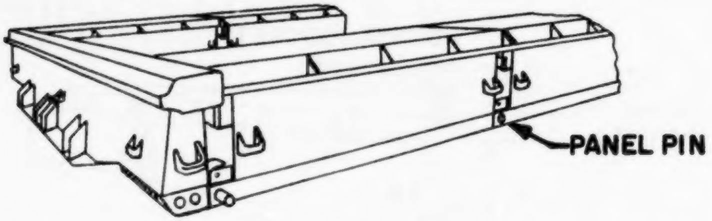
NOTE

It may be necessary to lift the Big U slightly to insert the panel pins in the top panels. This is because the weight of Big U over compresses the guide bushings.

(h) Insert panel pin through top panels until shoulder touches jaws.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

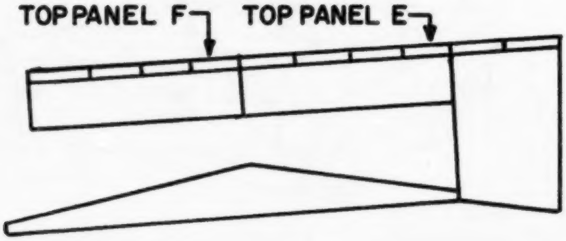
Step 2.a. Assembly Procedures (Cont).



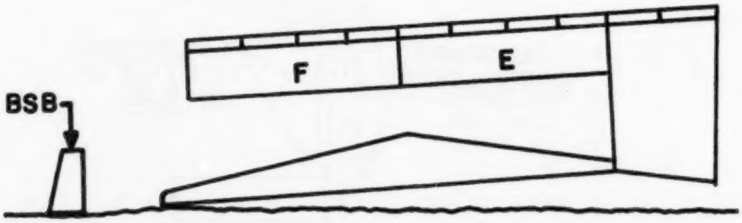
(i) Put retainer clip through the end of panel pin.

⑩ To complete end of bridge using piece by piece method.

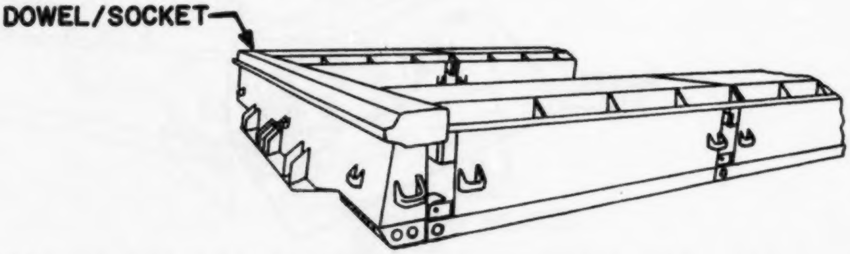
(a) Pin top panel F to top of panel E.



(b) Lift and carry bankseat beam to rear of bridge.



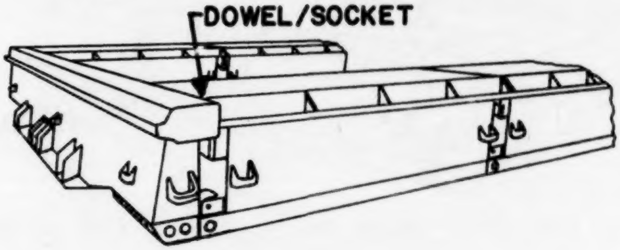
(c) Align dowels and sockets of bankseat beam on one side of bridge with those of top panel.



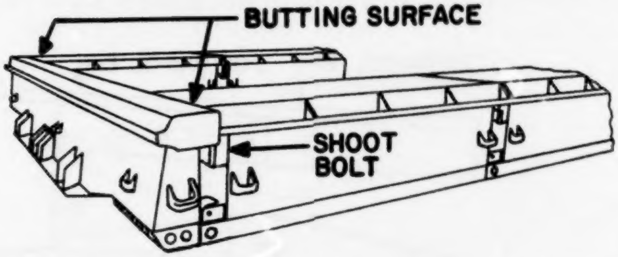
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

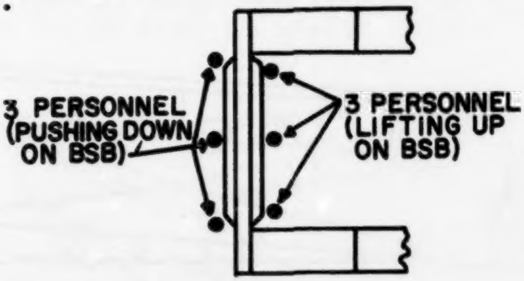
(d) Align dowels and sockets on other side of beam with those of other top panel.



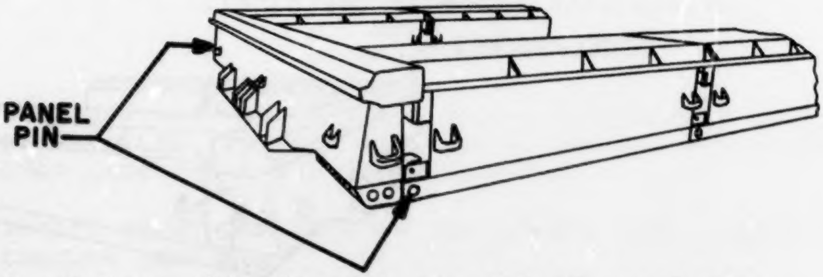
(e) When butting surfaces contact each other, lift and turn shoot bolts to lock bankseat beam to top panels.



(f) With 3 personnel lifting on inside of bankseat beam, and 3 personnel pushing down on the outside of beam compress bushings.


3 PERSONNEL (PUSHING DOWN ON BSB)
3 PERSONNEL (LIFTING UP ON BSB)

(g) When bushings are compressed insert panel pin through the pin holes until shoulder touches jaws.



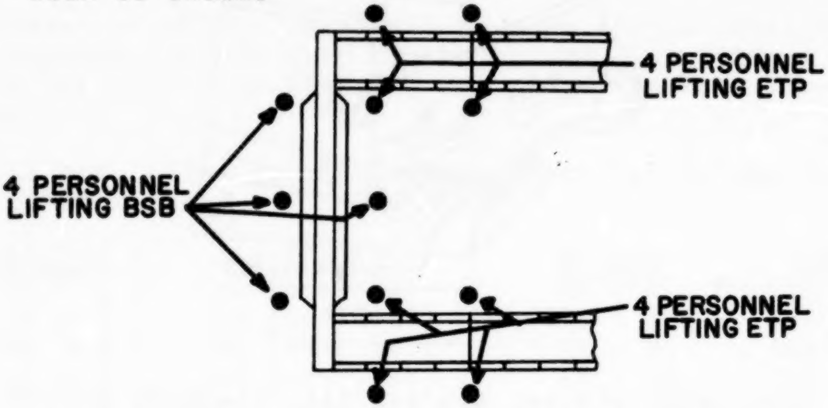
(h) Put retainer clip through the end of panel pin.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

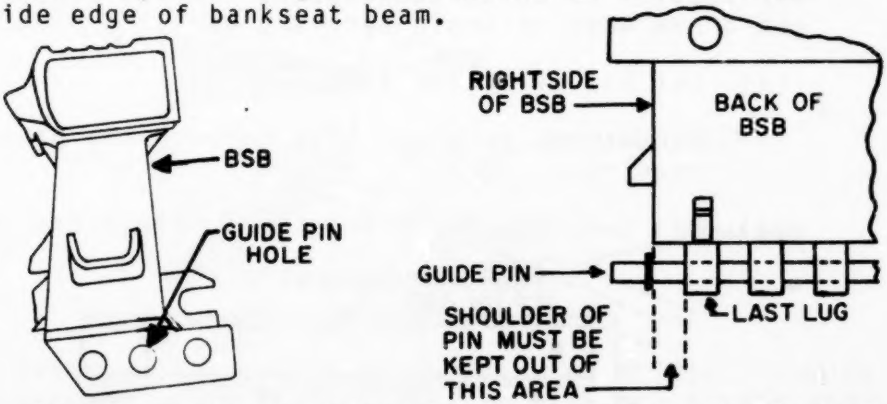
Step 2.a. Assembly Procedures (Cont).

(71) Pin end taper panels to bankseat beam.

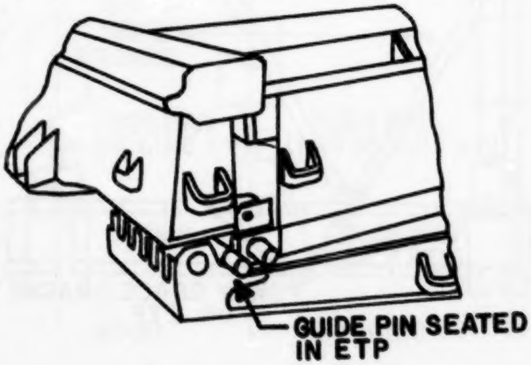
(a) Position 12 personnel on the end taper panels and bankseat beam as shown.



(b) Insert guide pin in center pin hole of bankseat beam. Shoulder of pin on right side should be flush with outside edge of bankseat beam.



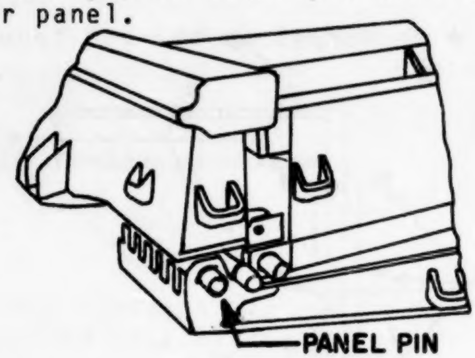
(c) With all 12 personnel, lift end taper panels and bankseat beam until guide pins seat in slots of end taper panels.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(d) Insert panel pin in outer pin hole of bankseat beam and end taper panel.



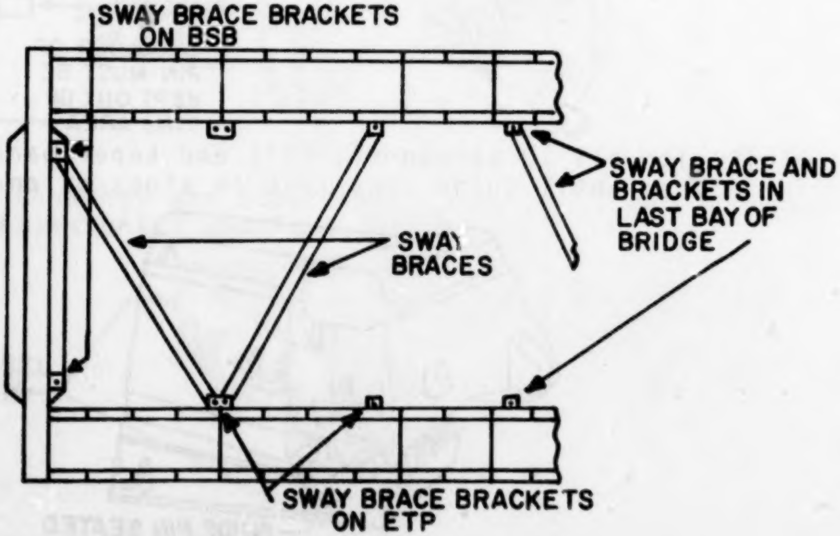
NOTE

Once this panel pin has started into pin jaws of ETP and BSB, DO NOT REMOVE IT, unless the presence of dirt or other debris prevents the pin from being fully seated. Leaving the pin part way in will allow the work party to take a slight break and to get a new hold on their carrying bars.

(e) Let end of bridge down.

(f) Do not put retainer clip through the panel pin, it is not required.

(g) Pin sway braces to end taper panels and bankseat beam.


SWAY BRACE BRACKETS ON BSB
SWAY BRACE AND BRACKETS IN LAST BAY OF BRIDGE
SWAY BRACES
SWAY BRACE BRACKETS ON ETP

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

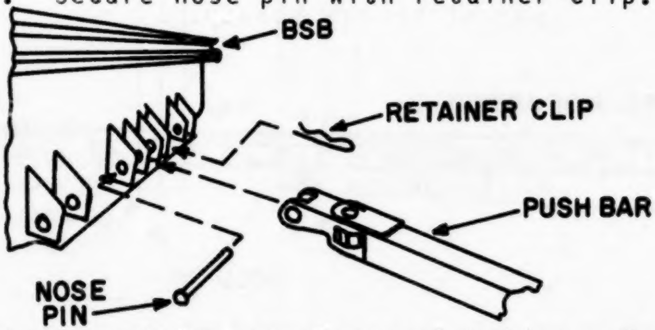
NOTE

The launch of all bridges will be done with a vehicle. Once this vehicle is connected to the bridge, it will not be disconnected until the far bank end of bridge has been lowered to the ground.

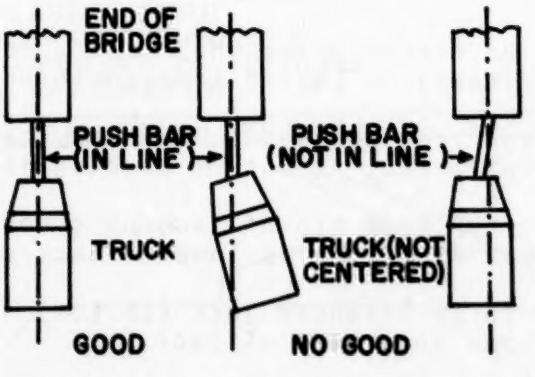
(72) Launch bridge to panel point given for bridge being constructed.

BRIDGE	LAUNCH TO	BRIDGE	LAUNCH TO
2E + 1	1p0 (over FRB)	2E + 7	3p6 (over FRB)
2E + 2	1p2 (over FRB)	2E + 8	3p7 (over FRB)
2E + 3	1p6 (over FRB)	2E + 9	4p3 (over FRB)
2E + 4	2p3 (over FRB)	2E + 10	5p0 (over FRB)
2E + 5	2p5 (over FRB)	2E + 11	5p2 (over FRB)
2E + 6	3p1 (over FRB)	2E + 12	5p6 (over FRB)

(a) Pin short push bar to center bracket of bankseat beam with nose pin. Secure nose pin with retainer clip.



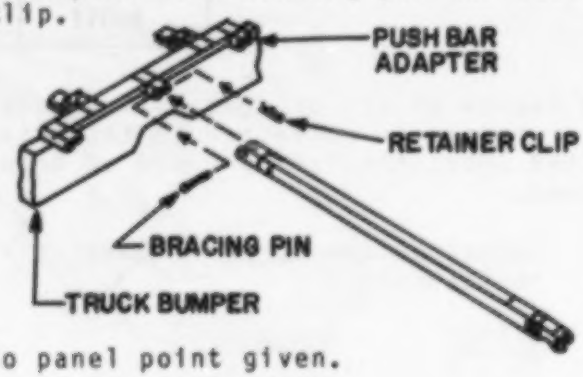
(b) Move vehicle into position near rear of bridge. Ensure that vehicle is in a straight line with the bridge and centered over the centerline.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(c) Pin push bar to adapter with bracing pin and secure pin with retainer clip.

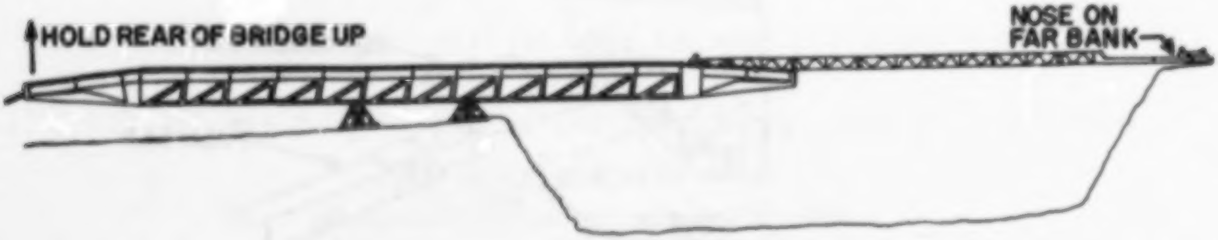


(d) Launch bridge to panel point given.

(e) Do not lock rollers. The vehicle is used to hold the bridge in place.

(73) Set up landing roller pedestal (LRP) MK1 on far bank.

(a) The right and left bridge crews raise the rear of bridge by hand to put tip of nose firmly on the far bank. Hold rear of bridge steady.



NOTE

Packing may be needed under the LRP if ground is soft or uneven. Packing (2 pieces) is needed to reposition the LRP.

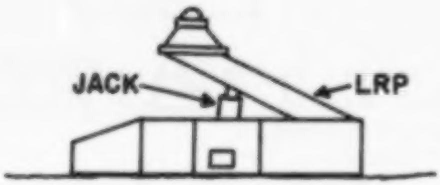
(b) Far bank crew crosses to far bank carrying packing and carrying bars. Amount of packing is determined by NCOIC.

(c) Remove LRP from tip of launching nose. As LRP is removed, the rear of bridge is lowered back onto roller beams.

(d) Place fully extended jack (15 ton) in base of LRP, lower jack hood onto head of jack.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

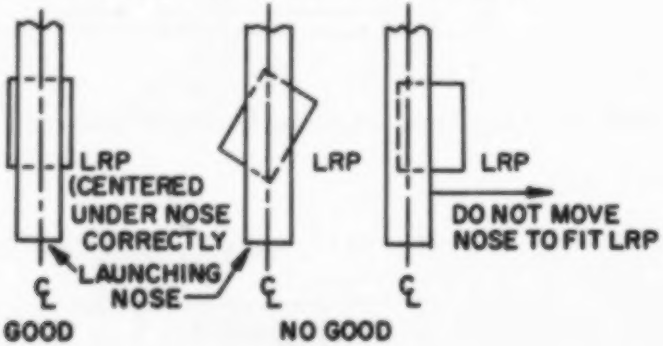
Step 2.a. Assembly Procedures (Cont).



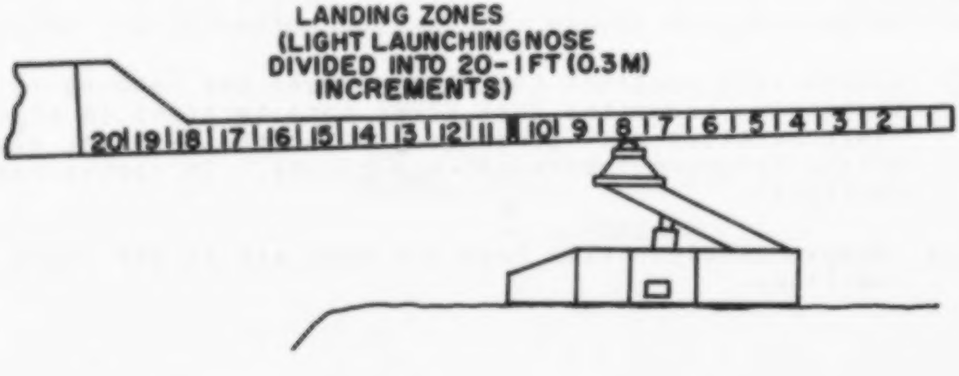
NOTE

The LRP must be positioned under the launching nose centered and its base parallel to the nose. Do not move nose sideways to fit LRP.

(e) Position LRP under the launching nose.


LRP (CENTERED UNDER NOSE CORRECTLY
LAUNCHING NOSE
℄
GOOD
LRP
℄
LRP
DO NOT MOVE NOSE TO FIT LRP
℄
NO GOOD

(f) With the panel point of launch over the FRB check to ensure that the landing zone (LZ) given is over the center of the LRP.


LANDING ZONES (LIGHT LAUNCHING NOSE DIVIDED INTO 20-1FT (0.3M) INCREMENTS)
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

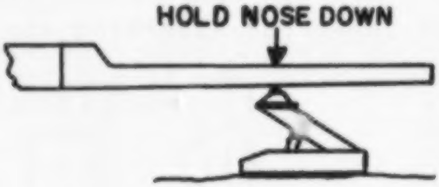
Step 2.a. Assembly Procedures (Cont).

NOTE

A landing zone number higher than the given LZ is always permitted. Never use a LZ number lower than that given for the bridge being constructed.

BRIDGE	LZ
2E + 1 and 10 bay	3
2E + 2, 5, 8 and 11 bay	8
2E + 3, 6, 9 and 12 bay	5
2E + 4 and 7 bay	4

(g) Raise rear of bridge. Far bank crew guides launching nose onto roller and will hold nose in place during next step.



(74) Continue launch until panel point Dp2 is over FRB.

NOTE

Nose sections (light and heavy) can be removed during launch after they have passed the center of the landing roller. It is important to remember that at least 6 in (15 cm) of a nose section must extend beyond the landing roller at all times.

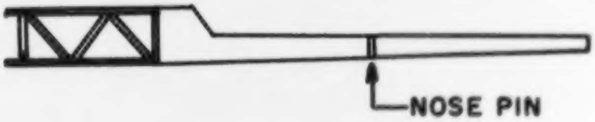
(75) Remove nose sections that have passed the landing roller pedestal. Leave the last three nose sections in place. These sections will be removed after the far bank end of bridge has been lowered to the ground. To remove nose sections:

(a) Remove retainer clip from the nose pin in the light nose sections.

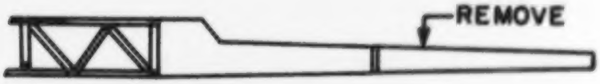
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

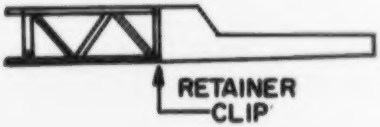
(b) Remove nose pin from the light nose sections.



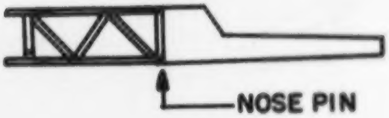
(c) Lift and remove light nose front section.



(d) Remove retainer clip from the nose pin in the light nose rear section.



(e) Remove nose pin from the light nose rear section.

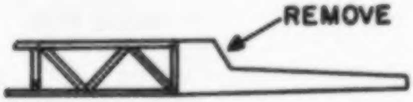


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

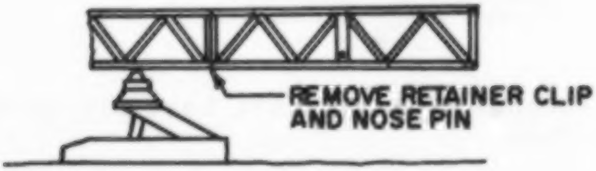
(f) Light nose rear must be lifted slightly to allow unlocking of the shoot bolts.

(g) Unlock shoot bolts and remove light nose rear section.



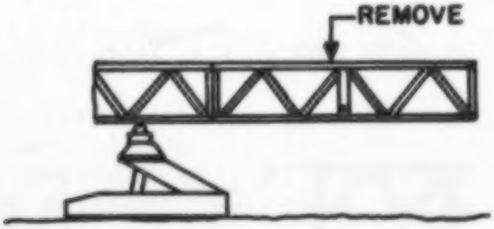
(h) Remove retainer clip from the nose pin connecting launching nose heavy sections.

(i) Remove nose pin from the launching nose heavy section.



(j) Launching nose heavy sections must be lifted slightly to allow unlocking of the shoot bolts.

(k) Unlock shoot bolts and remove launching nose heavy section.



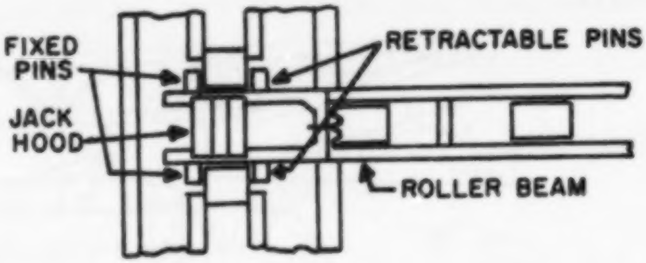
⑯ Disassemble rear roller beam.

(a) Lift roller beam at both ends and remove hydraulic jacks. Lower jack hoods.

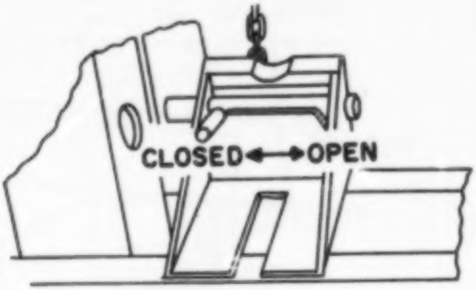
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

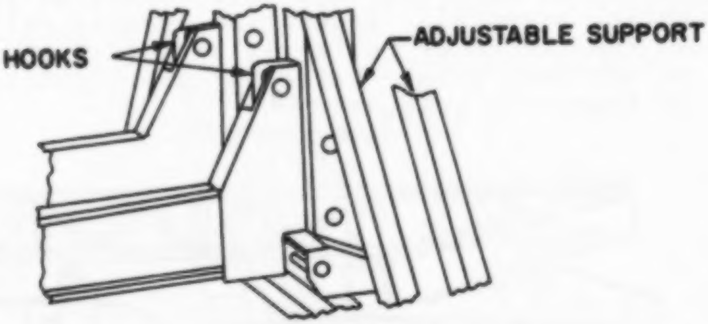
(b) Push retractable pins in and slide roller beam out of adjustable supports.



(c) Unlock shoot bolts in adjustable support to release bottom of cross girder.



(d) Lift cross girder lugs out of adjustable support hooks. Remove adjustable support from baseplate.



(e) Move baseplates from site.

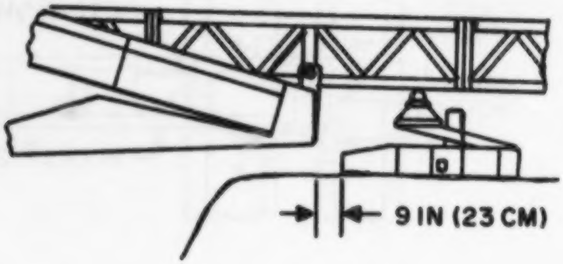
(f) Pull cross girder from under push bar.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

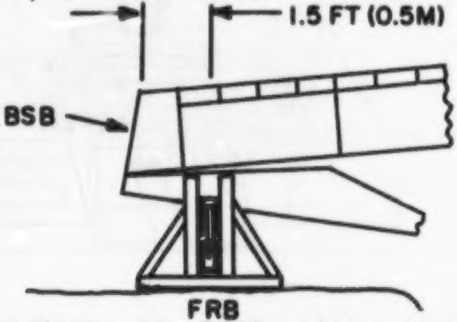
⑰ Continue launch until either:

(a) The far bank bankseat beam is within 9 in (23 cm) of LRP base.



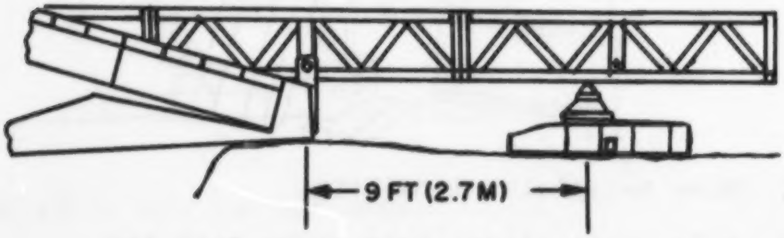
OR

(b) The near bank end of bridge is within 1.5 ft.(0.5 m) (2 panel points) of center of the FRB rollers.



(c) Stop launch when one of the above conditions are met.

(78) Lower far bank end of bridge by operating jack in landing roller pedestal. Reposition landing roller pedestal so the center of roller is 9 ft (2.7 m) from nose roller on bankseat beam. Raise LRP until roller touches bottom of launching nose.



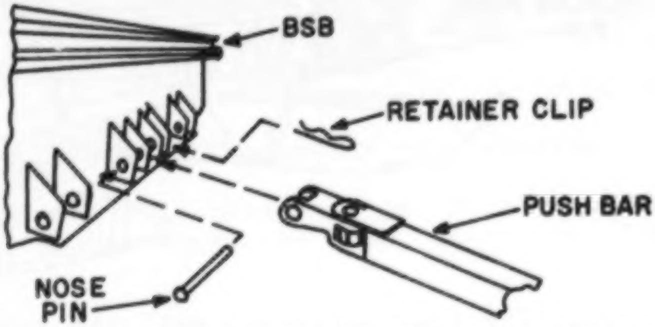
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

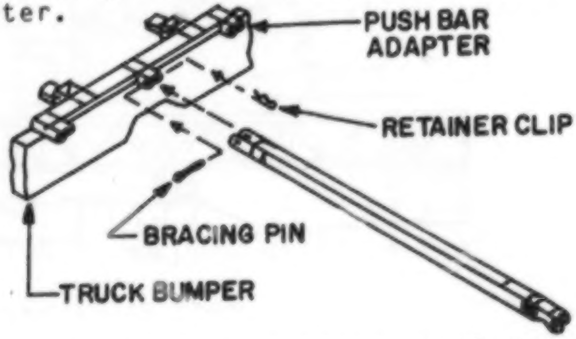
(79) Disconnect vehicle from bridge.

(a) Move vehicle slightly to release tension on pins.

(b) Remove retainer clip and nose pin from push bar at bankseat beam.

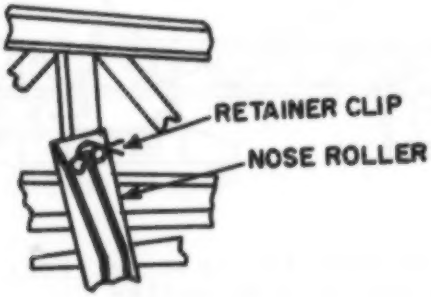


(c) Remove retainer clip and bracing pin from push bar at push bar adapter.



(80) Remove launching nose heavy sections until the section resting on the landing roller pedestal is reached.

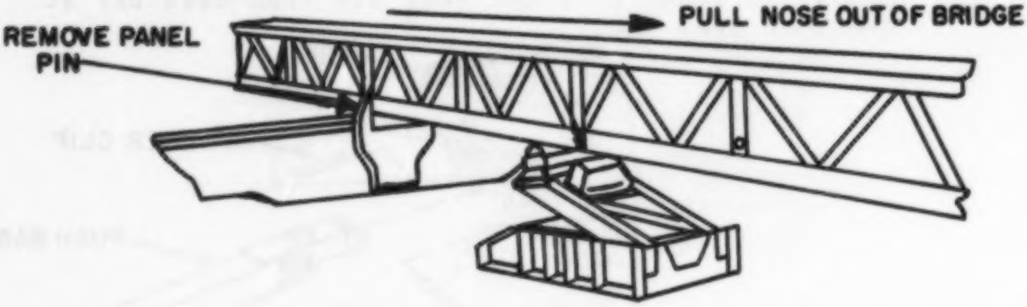
(a) Remove retainer clip from panel pin in nose roller and prepare to remove panel pin.



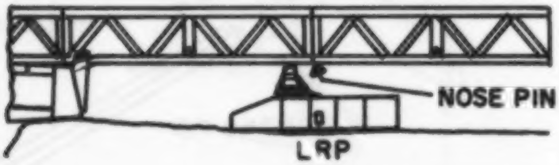
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

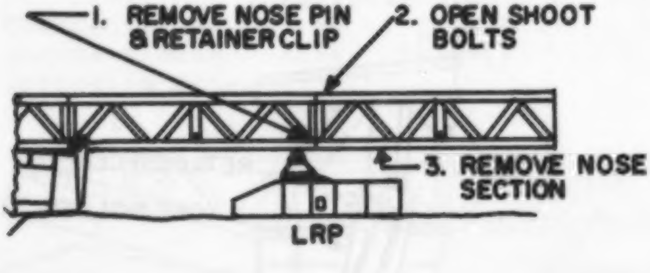
(b) With one person on launching nose cross girder to lift gravity latch, four personnel pull nose sections away from gap. Panel pin is removed from nose roller as nose is moved.



(c) The four personnel pull the last three nose sections until the nose pin connecting the first two has passed the landing roller. Stop movement of nose.



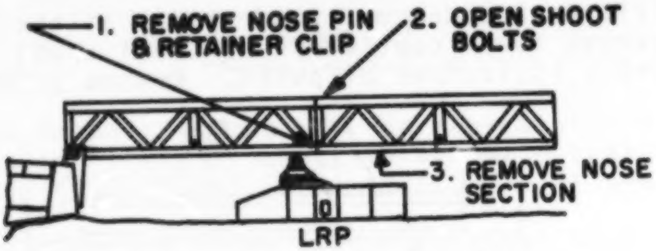
(d) Remove the first nose section by removing retainer clip, nose pin and unlocking shoot bolts.



(e) Move the last two nose sections until the nose pin has passed the landing roller.

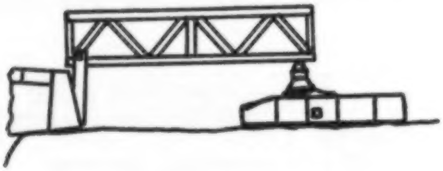
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).



(f) Repeat Step (d) to remove the second nose section.

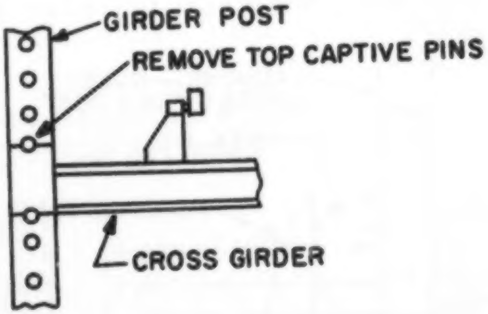
(g) Remove last nose section, move landing roller pedestal to the side of site, and remove the nose roller from the bankseat beam.



(81) Remove launching nose cross girder with 6 personnel.

(a) Remove retainer clips from all captive pins.

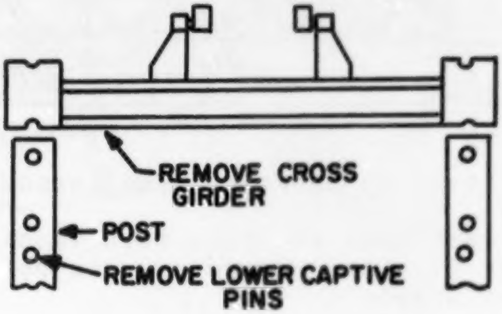
(b) Remove top captive pins in cross girder.



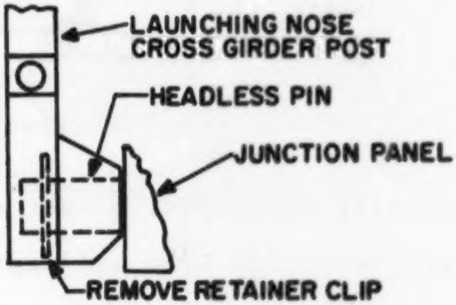
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(c) Lift both sides of cross girder at the same time and remove lower captive pins. Pull cross girder upward until it is free of posts. Remove girder from bridge.

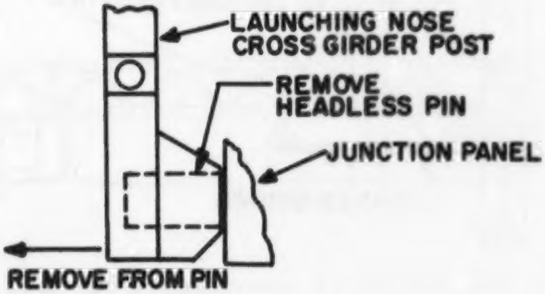


(d) Remove retainer clip from headless pin in bottom of cross girder posts.



(e) Remove posts from headless pins.

(f) Remove headless pins from junction panel.



(g) Far bank crew returns to near bank.

2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

NOTE

There are two methods of putting the near bank end of bridge on the ground. The first is using the standard hydraulic jacks and jackposts. The second is using a crane if one is available.

The procedures for the first method start at Step 2.a. 82 ,

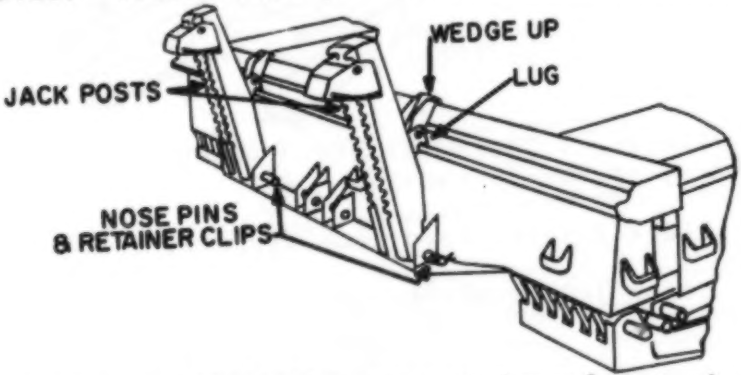
the second at Step 2.a. 83 .

The method used depends on the availability of equipment.

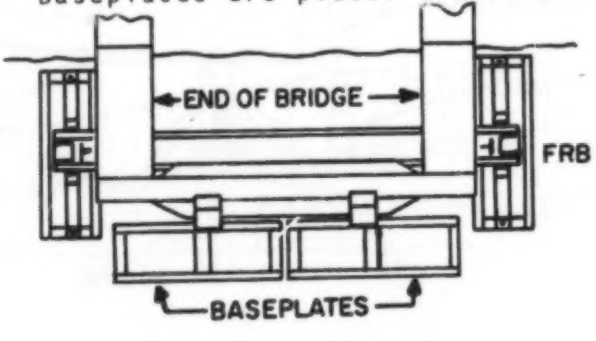
PROCEED TO STEP FOR METHOD CHOSEN.

(82) To put bridge on ground using hydraulic jacks and jack posts.

(a) Place lugs of jack posts in ramp ledge of bankseat beam. Guide bottom of jack posts into brackets on outside of bankseat beam. Pin jack posts to bankseat beam with nose pins put in from the inside of the bracket to the outside. Secure nose pin with retainer clip.



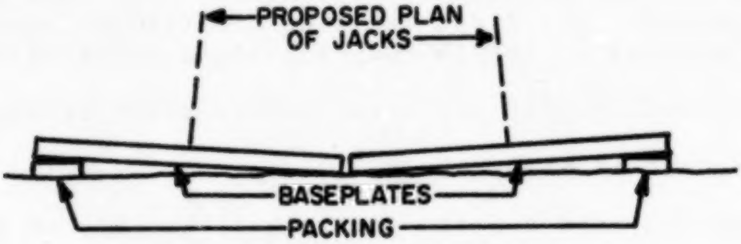
(b) Position two adjustable support baseplates at end of bridge. Baseplates are placed end to end at centerline.



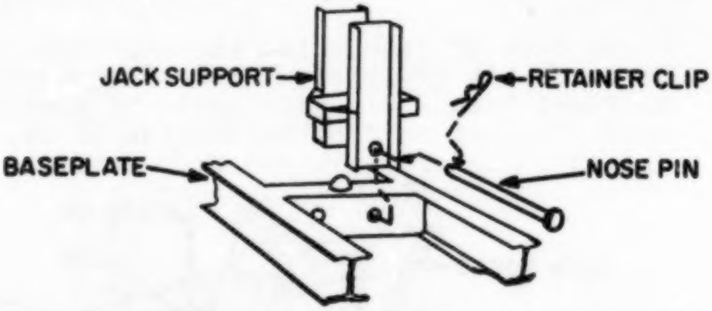
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(c) Place packing under baseplate as needed to make jacks lean slightly toward each other. Jacks must lean inward at the top to increase stability.



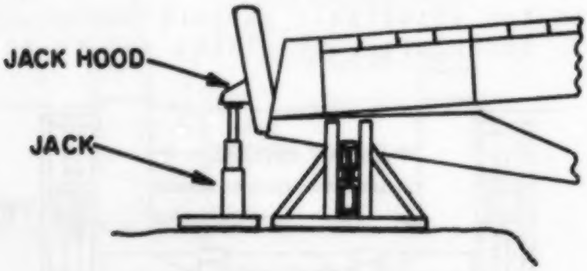
(d) Pin a jack support to each baseplate with nose pin and secure with retainer clip.



(e) Prepare 4 jacks for use by operating jacks until 9 in (23 cm) of ram is showing.

(f) Place 2 jacks into jack support.

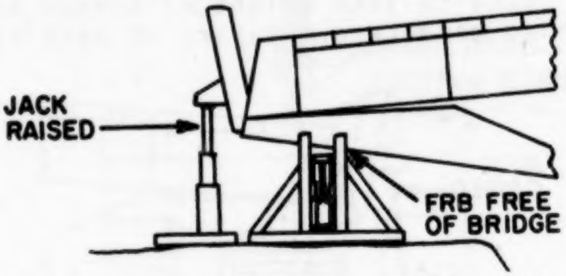
(g) Lower jack hoods to jack head.



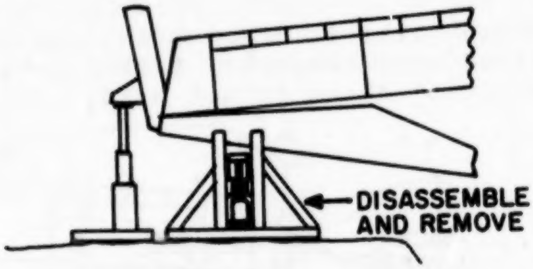
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

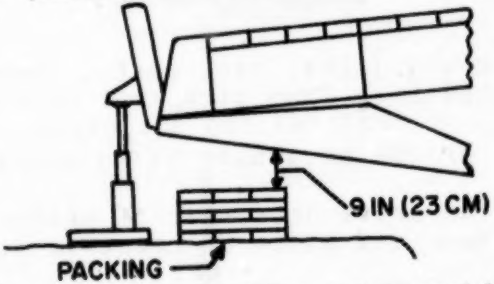
(h) Hold hood of post against jack head and jack post. Raise jacks to take weight of the bridge from the front roller beam. The weight of the bridge is resting on the jacks.



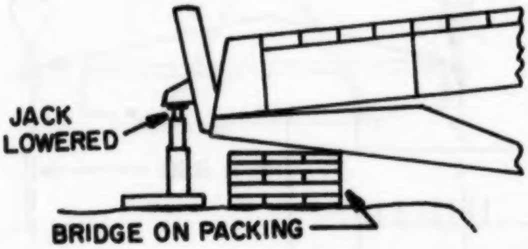
(i) Remove front roller beam by pulling it out to one side of the bridge.



(j) Place packing under end taper panel to form temporary packing. Stack should be built to within 9 in (23 cm) of end taper panel.



(k) Operate jacks to lower bridge onto packing. Remove hood from jacks.

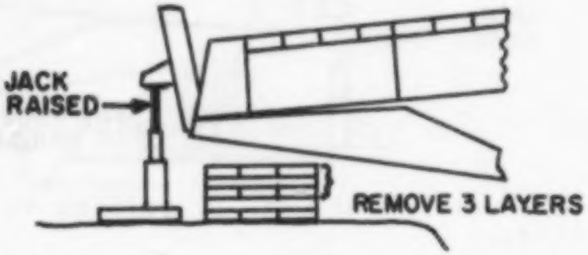


2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

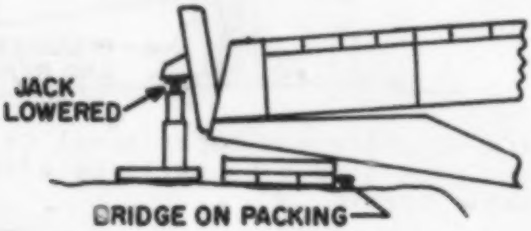
Step 2.a. Assembly Procedures (Cont).

(l) Remove jacks and replace immediately with other 2 jacks. Reposition jack hoods to head of jacks.

(m) Raise jacks to take weight of bridge off of packing. Remove no more than 3 layers of packing.



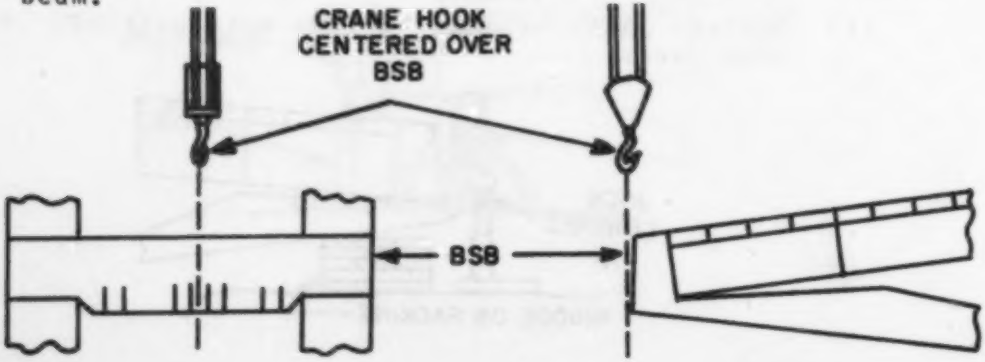
(n) Operate jacks to lower bridge onto packing or bank. If lowered onto temporary packing, repeat (l) and (m) to reposition jacks to get bridge onto bank.



(o) Remove all jacks, jack posts, supports, baseplates and loose packing from site.

⑧③ To put bridge on ground using crane.

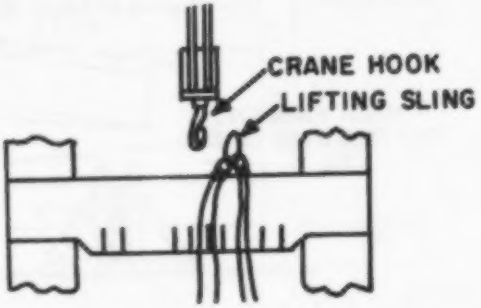
(a) Position crane near rear of bridge on centerline. Ensure that hook and block of crane is centered over bankseat beam.



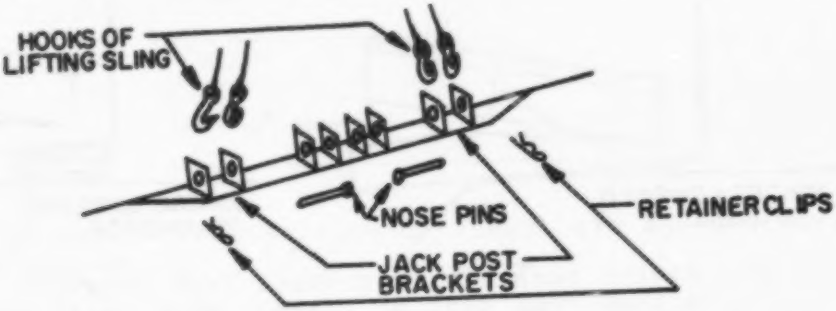
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

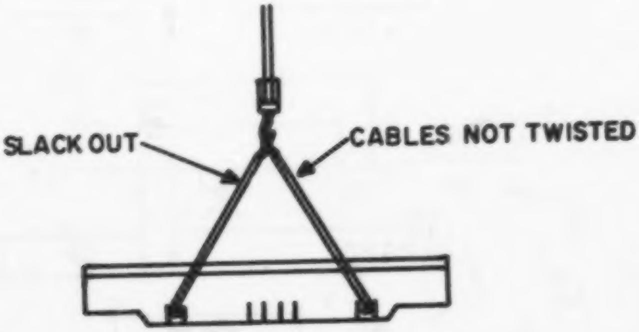
(b) Lower crane hook and attach 4 legged lifting sling. All legs of sling will be used to lift bridge.



(c) Place hooks of two legs in each jack post bracket. Tip of hooks must face outside of bankseat beam. Pin hooks in with a nose pin and secure with retainer clip.



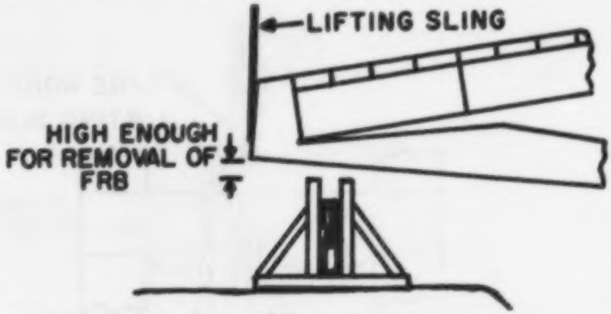
(d) Operate crane to take the slack from the sling legs. Ensure that cables are not twisted.



2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

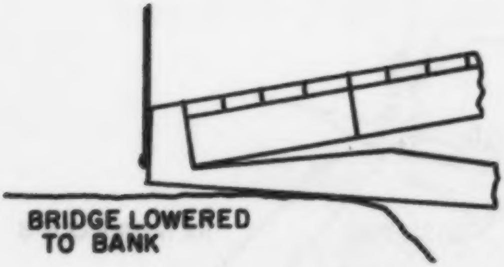
Step 2.a. Assembly Procedures (Cont).

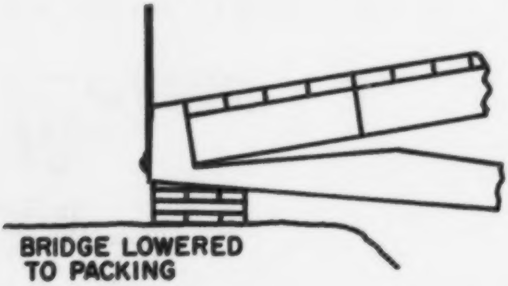
(e) Lift bridge slowly and only high enough to permit the roller to be slid out from under the end of bridge.



(f) Disassemble front roller beam.

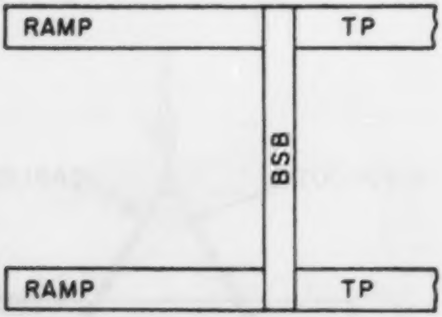
(g) Lower bridge slowly to ground or onto packing, if required.





(h) Remove nose pins and hooks from bankseat beam. Remove slings from hook of crane. Move crane from site.

(84) Hook outside ramp units on near bank bankseat beam.



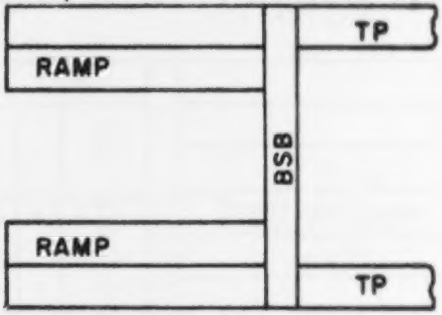
NOTE

Make sure that anti-lift lugs are engaged on all ramp units except center unit.

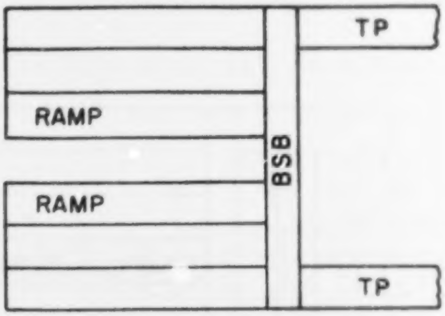
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

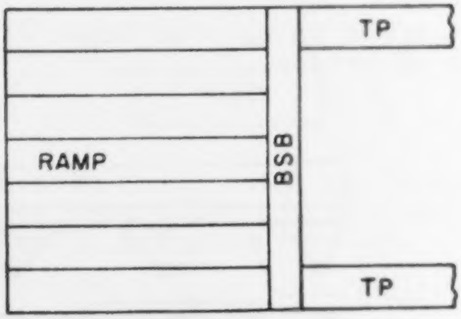
(85) Hook second ramp units to next to outside ramp unit.



(86) Put third ramp unit next to second ramp unit.



(87) Hook center ramp unit on bankseat beam and drop other end to ground.



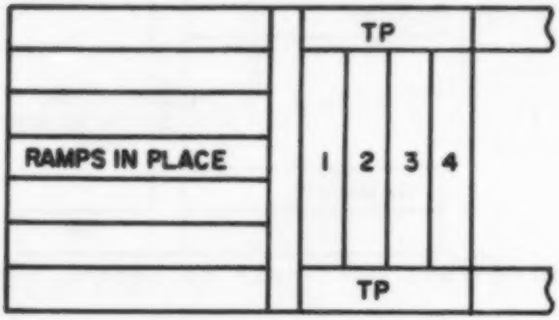
NOTE

Bankseat beam does not have anti-lift lugs for center ramp unit.

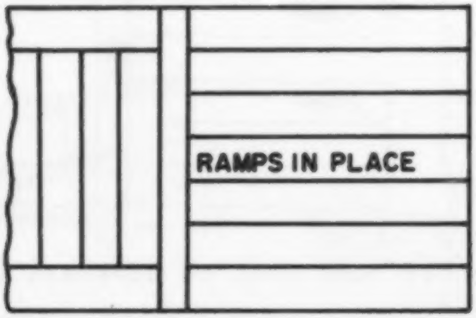
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

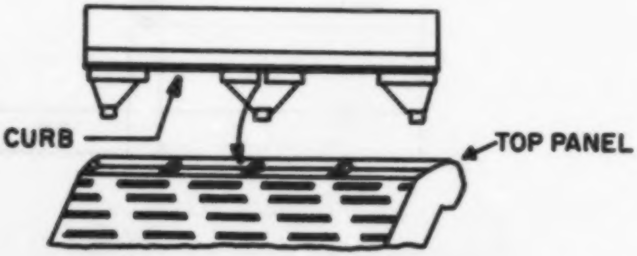
(88) Starting on near bank side of bridge, hook deck units on inside top panel rails.



(89) Put ramp units on far bank end of bridge.



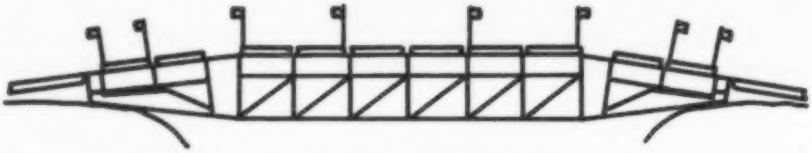
(90) Hook all curbs on outside edges of bridge. Start on near bank end of bridge.



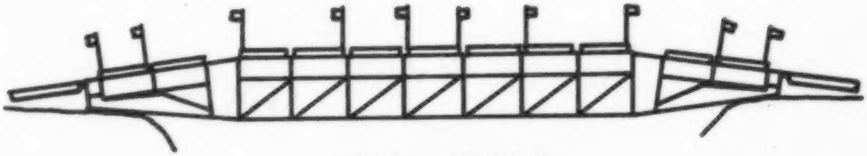
2-25. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site) (Cont).

Step 2.a. Assembly Procedures (Cont).

(91) Put bridge guide markers in place.



EVEN NO. OF BAYS



ODD NO. OF BAYS

NOTE

After bridge has passed inspection, put bridge classification signs in place, then make sure that all equipment is away from roadway. The bridge is now ready to use.

NOTE

Only one MLC 60 vehicle permitted on bridge at a time.

NOTE

Anchorage procedures for double story bridges are found in the last section of this chapter.

2-26. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site - Near Bank).

a. This paragraph describes the step by step procedures for disassembly of Double Story - 2E + 1 through 2E + 12 Bay Bridges.

b. The disassembly procedures are basically the reverse of assembly, but there are differences, refer to Table 2-33. Because of these differences the user is advised to follow the step by step procedures carefully.

c. Once the user becomes familiar with the step by step procedures for disassembly, it will be possible to disassemble any Double Story - 2E + 1 through 2 E + 12 bay bridge using the De-Launch Table 2-34.

d. This table provides the necessary instructions to disassemble and de-launch all bridges.

e. DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

2-26. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site - Near Bank) (Cont).

TABLE 2-33. Required Steps Per Bridge Length.

2E + 1	2E + 2	2E + 3	2E + 4	2E + 5	2E + 6
1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (16)(e) (18) thru (32) (53) and (56) (58) thru (60) (62) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (52) thru (56) (58) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (34) and (35) (52) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (34) and (35) (48) (52) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (35) (48) (51) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (34) and (35) (44) thru (46) (48) (51) thru (73)

2E + 7	2E + 8	2E + 9	2E + 10	2E + 11	2E + 12
1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (34) and (35) (43) thru (46) (48) (51) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (34) and (35) (40) thru (42) (46) thru (48) (50) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (35) (40) thru (42) (46) thru (48) (50) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (34) and (35) (37) thru (42) (46) thru (48) (50) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (32) (34) and (35) (36) thru (42) (46) thru (73)	1.a and b 2.a(1) thru (9) (10) or (11) (12) thru (18) (20) thru (42) (46) thru (73)

2-26. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site - Near Bank) (Cont).

Table 2-34. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Normal Site - Near Bank).

Bridge ft Length m	37 11.3	43 13.1	49 14.9	55 16.8	61 18.6	67 20.4
2E + No. of Bays	1	2	3	4	5	6
Nose Construction	2N1	3N1	3N1	3N1	4N1	4N1
Build	Notes a, b, and c	Notes a, b, and d	Notes a, b, and d	Notes a, b, and d	Notes a, b, d and e	Notes a, b, d and e
De-Launch To and Add	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB
De-Launch To and Recover	1p0 LRP	1p2 LRP	1p6 LRP	2p3 LRP	2p5 LRP	3p1 LRP
Boom To and Remove (CG)						4p0 E (1p6)
Boom to and Remove (CG)			2p4 E (Bp0)	3p0 E (Ap2)	3p0 E and 5 (Ap2)	3p0 6 and 5 (Ap2)
Boom To and Remove (CG)	1p3 E (Bp7)	1p6 E (Bp5)	1p4	1p4 4 (Bp0)	1p4 4 (Bp2)	1p4 4 (Bp2)
Remove	2N1	3N1 and 2	3N1, 3, and 2	3N1, 3, and 2	4N1, 3, and 2	4N1, 3, and 2
Remove	RRB and 1	RRB and 1	RRB and 1	RRB and 1	RRB and 1	RRB and 1
Complete By:	Note f	Note f	Note f	Note f	Note f	Note f

2-26. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Normal Site - Near Bank) (Cont).

Table 2-34. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Normal Site - Near Bank) (Cont).

Bridge Ft Length m	73 22.3	79 24.1	85 25.9	91 27.7	97 29.6	103 31.4
2E + No. of Bays	7	8	9	10	11	12
Nose Construction	4N1	5N1	5N1	5N1	6N1	6N1
Build	Notes a, b, and e	Notes a, b, d, and e	Notes a, b, d, and e	Notes a, b, d, and e	Notes a, b, d, and e	Notes a, b, d, and e
De-launch To and Add	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB
De-launch To and Recover	3p6 LRP	3p7 LRP	4p3 LRP	5p0 LRP	5p2 LRP	5p6 LRP
Boom To and Remove (CG)				5p7 E (3p5)	6p1 E (3p7)	6p1 E and 12 (3p7)
Boom To and Remove (CG)	4p4 E (2p2)	4p6 E (2p5)	4p6 E and 9 (2p5)	4p6 10 and 9 (2p5)	4p4 11, 10, and 9 (2p3)	4p4 11, 10, and 9 (2p3)
Boom To and Remove (CG)	3p0 7, 6, and 5 (Ap2)	3p2 8, 7, and 6 (1p0)	3p2 8, 7, and 6 (1p0)	3p2 8, 7, and 6 (1p0)	3p0 8, 7, and 6 (Ap2)	3p0 8, 7, and 6 (Ap2)
Boom To and Remove (CG)	1p4 4 (Bp2)	1p4 5 and 4 (Bp5)	1p4 5 and 4 (Bp5)	1p4 5 and 4 (Bp5)	1p4 5 and 4 (Bp7)	1p4 5 and 4 (Bp7)
Remove	4N1, 3, and 2	5N1, 3, and 2	5N1, 3, and 2	5N1, 3, and 2	6N1, 3, and 2	6N1, 3, and 2
Remove	RRB and 1	RRB and 1	RRB and 1	RRB and 1	RRB and 1	RRB and 1
Complete By:	Note f	Note f	Note f	Note f	Note f	Note f

NOTES:
- a. Position FRB under RBSB.
- b. Position center of LR (in LRP) 9 ft.(2.7m) from BSB.
- c. For 2E + 1 only Add 2 LNH AND LLN.
- d. For 2E + 2 thru 2E + 12, add 3LNH. Reposition LRP [base 9 in (23 cm) from BSB].
- e. Add remaining nose sections.
- f. Disassemble E and FRB. Clear site.

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2-26. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

This paragraph provides the steps to disassemble any of the 2E + 1 through 2E + 12 bay DS MGB's on the original near bank. The bridge can be disassembled on the original far bank or near bank. If the bridge is to be disassembled on the far bank, the erection equipment and launching nose parts must change sides. Procedures for disassembly on the far bank are provided in paragraph 2-27.

Step 1. Preparation for Disassembly.

a. If pumps, hoses and water are available, the bridge, erection and link components should be washed before loading them on pallets. When washing is to be done, the parts are taken from the bridge to the washing area, then loaded on the proper pallet.

b. If washing cannot be done, the parts are loaded on the proper pallet.

Step 2. Disassembly.

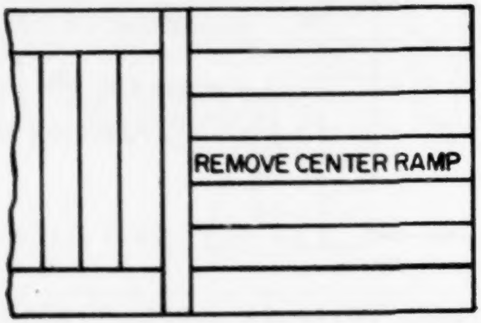
a. Steps needed to disassemble the bridge are as follows:

① Remove bridge classification signs.

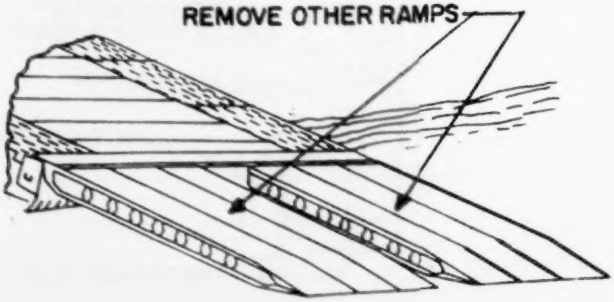
② Remove bridge guide markers.

③ Remove all curbs.

④ Remove center ramp unit on far bank.



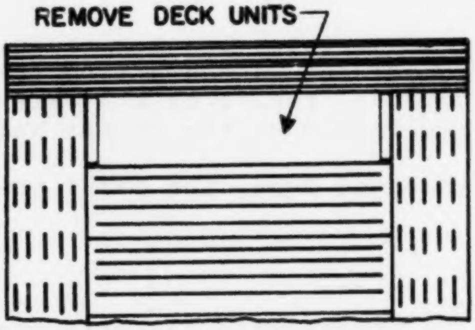
⑤ Remove the remaining ramp units on far bank.



2-26. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

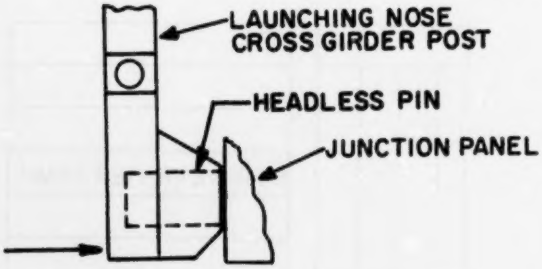
⑥ Remove deck units, starting on the far bank end of bridge. Leave deck unit in the second recess of bay 1 for all bridges. For 2E + 7 through 2E + 12 bay bridges, leave one deck in the third deck recess of bay 7. For 2E + 11 and 2E + 12 bay bridges, leave one deck in the third deck recess of bay 11.



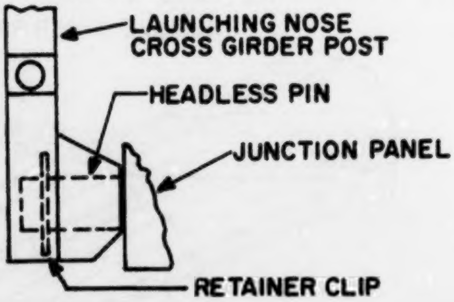
⑦ To install launching nose cross girder (LNCG) posts on far bank junction panel:

(a) Place headless pins in pin holes in junction panel.

(b) Position LNCG posts on headless pins and lugs on junction panel.



(c) Secure LNCG posts to junction panel with retainer clips in each end of headless pins.

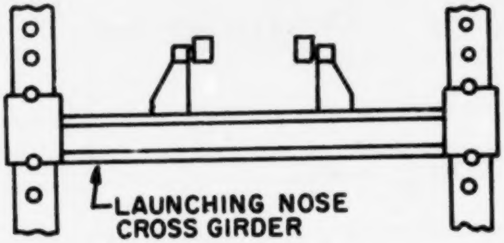


2-26. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

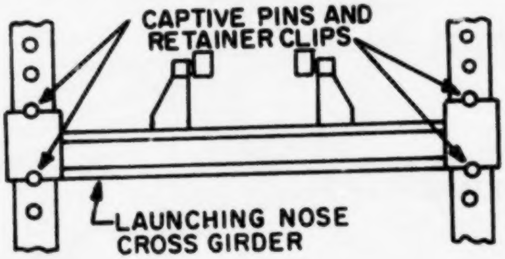
⑧ To install launching nose cross girder (LNCG) on posts:

(a) Position LNCG at height required.

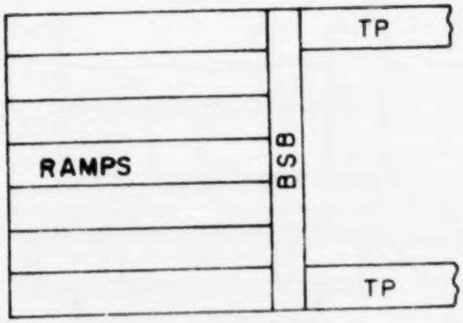


(b) Put captive pins through LNCG and posts.

(c) Secure captive pins with retainer clips.



⑨ Remove ramp units from near bank end of bridge.



2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

NOTE

There are two methods of raising the near bank end of bridge to install the front roller beam (FRB). The first employs the standard hydraulic jacks and jack posts. The second is using a crane if one is available.

The procedures for the first begin at Step 2.a 10 ,

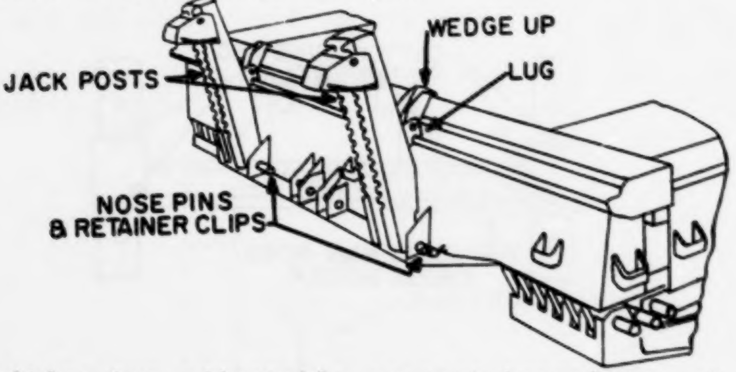
the second at Step 2.a. 11 .

The method used depends on the availability of equipment.

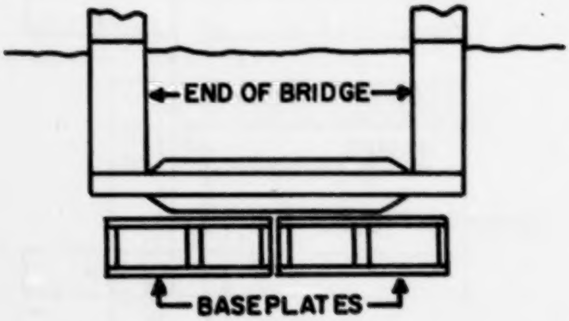
PROCEED TO STEP FOR METHOD CHOSEN.

⑩ To raise bridge using hydraulic jacks and jack posts:

(a) Hook and pin jack posts to the bankseat beam (BSB). Secure with retainer clips.



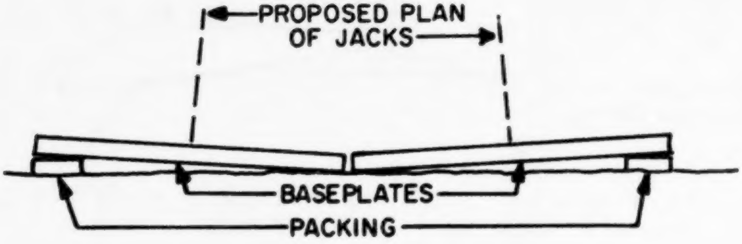
(b) Position two adjustable support baseplates at end of bridge. Baseplates are placed end to end at centerline.



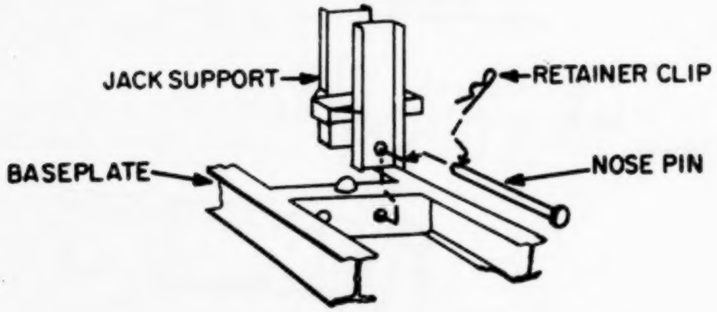
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

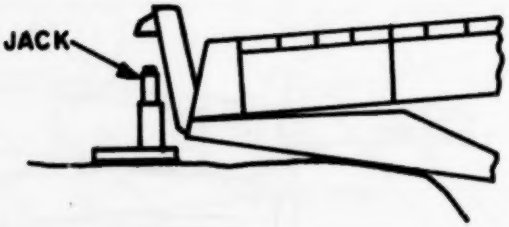
(c) Place packing under baseplates as needed to make jacks lean toward each other. Jacks must lean inward at the top to increase stability.



(d) Pin a jack support to each baseplate with a nose pin and secure with a retainer clip.



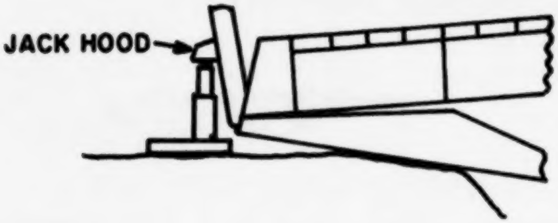
(e) Place a jack into each jack support.



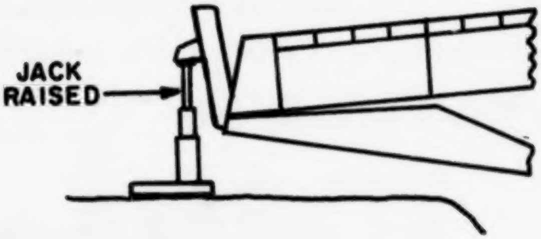
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

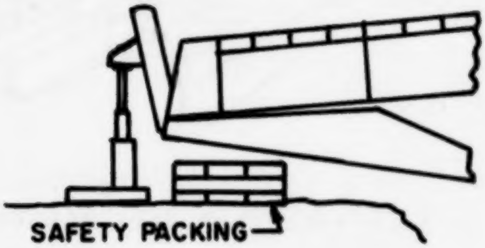
(f) Lower jack hoods to jack head.



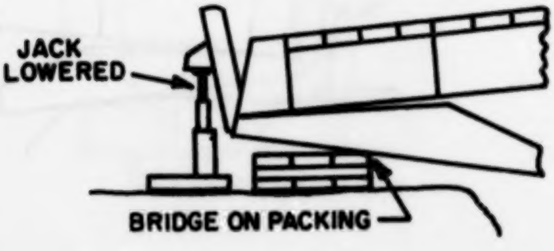
(g) Hold hood of post against jack head and jack post. Operate jack to raise bridge.



(h) As bridge is raised, place safety packing under end taper panels (ETP) until jacks have reached maximum lift.



(i) Operate jacks to set bridge down on packing.



2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

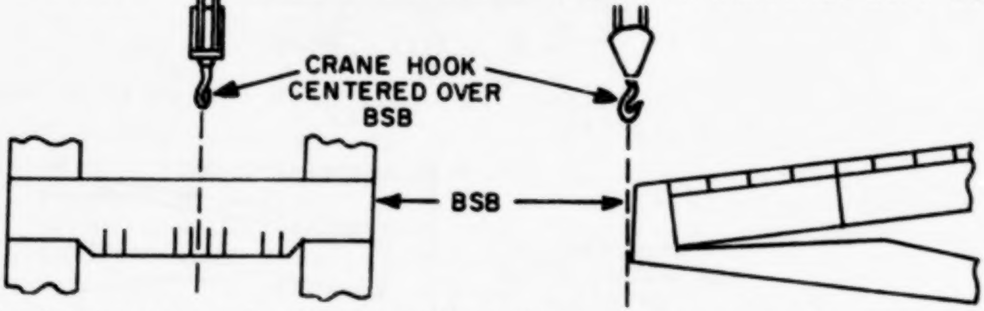
Step 2.a. (Cont).

(j) Lower jacks and re-position jack hoods, repeat (g) and (h) above. Continue this re-staging of jacks until the end of bridge is high enough to install FRB.

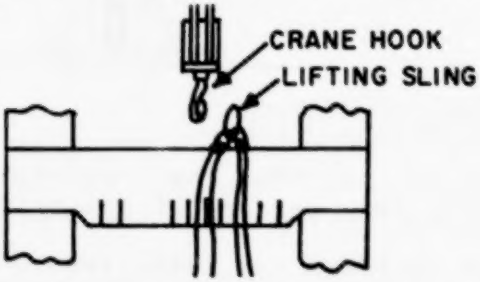
PROCEED TO Step 2.a. ⑫.

⑪ To raise bridge using a crane.

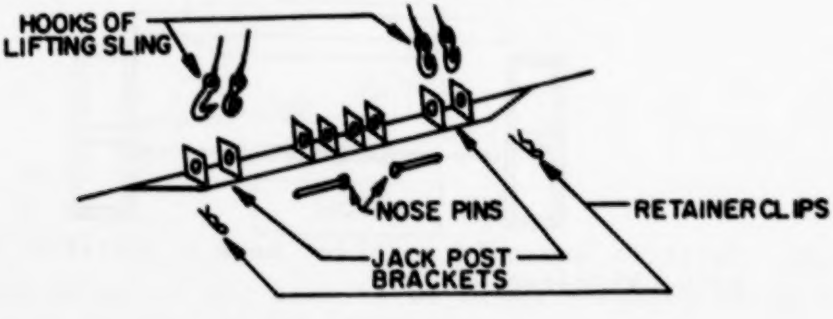
(a) Position crane near rear of bridge on centerline. Ensure that hook and block of crane is centered over BSB.



(b) Lower crane hook and attach four-legged lifting sling. All four legs of sling will be used to lift bridge.



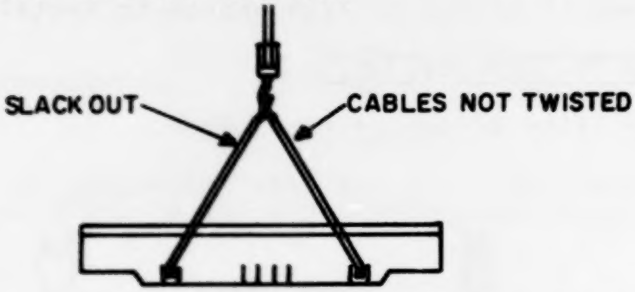
(c) Place hooks of two legs in each jack post bracket. Tip of hook must face outside of BSB. Pin hooks in with a nose pin and secure with retainer clip.



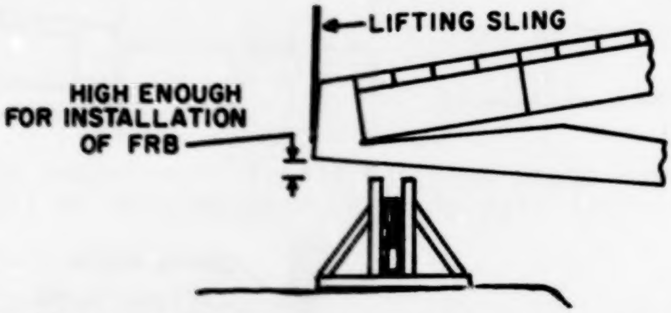
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(d) Operate crane to take slack from the sling legs. Ensure that cables are not twisted.



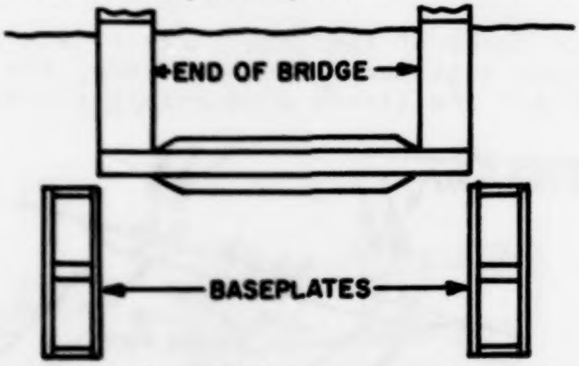
(e) Lift bridge slowly and only high enough to allow the FRB to be installed.



PROCEED TO STEP 2.a. ⑫.

⑫ Assemble and position the front roller beam (FRB) over the centerline near the end of the bridge.

(a) Put two double story baseplates on site as shown.



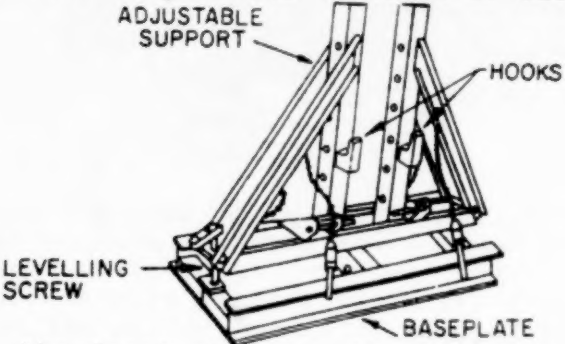
(b) Position and hold a roller beam adjustable support on each LRB baseplate.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

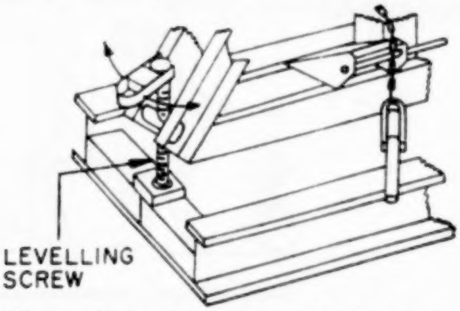
Step 2.a. (Cont).

(c) Ensure that hooks on supports face centerline.

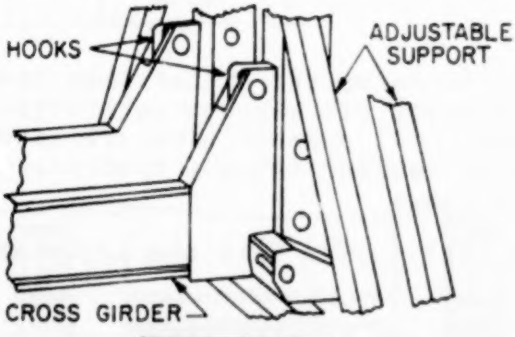
(d) Seat levelling screws in holes of baseplates.



(e) Turn the front or rear adjustable support levelling screws into the baseplate sockets so that adjustable support is vertical. Allow 1/4 in.(6 mm) space between screw and socket so that the support may rock back and forth on the pivot (front to rear).



(f) Hook a building frame cross girder on adjustable supports for FRB.



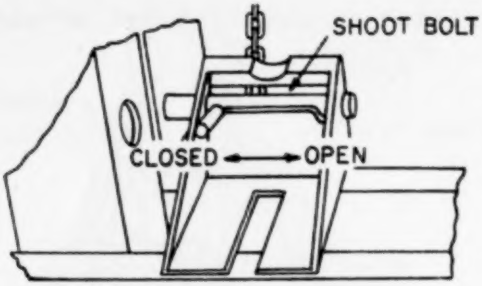
NOTE

One of the supports may have to be moved slightly so both ends of the cross girder can be attached.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

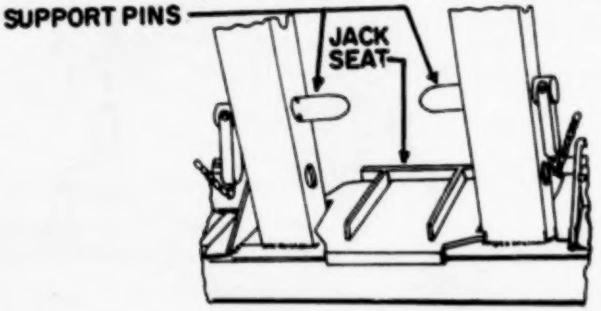
(g) Push shoot bolts through each cross girder and support bracket.



(h) Place a jack seat over support pins or lower rail in each adjustable support.

(i) Curved cut outs fit over pins or rail in bottom of support.

(j) Open end of U-shaped ridge faces away from centerline.



NOTE

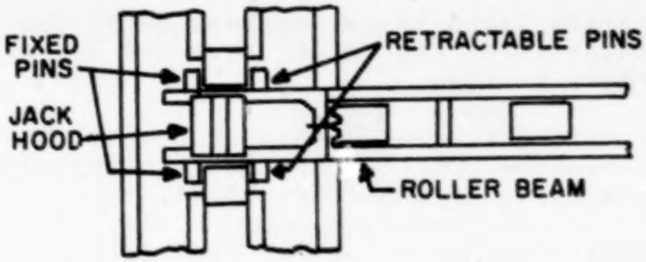
If roller beam is to be set higher than the lowest setting, push captive support pin through each adjustable support post at proper height. If support pins are used, ensure that they are fully seated (pushed in) and that the jack seat is fully seated on each pin.

(k) Place a roller beam into the adjustable supports of the FRB.

(l) Roller beam can be slid into supports from the side or put in over the top. Ensure that retractable pins are fully seated (pushed in) to clear the supports if the roller beam is slid in from the side.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

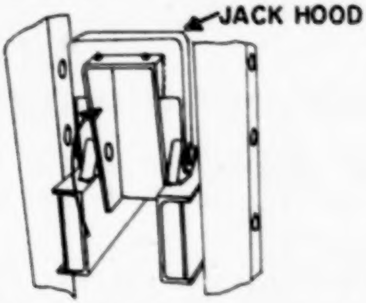
Step 2.a. (Cont).

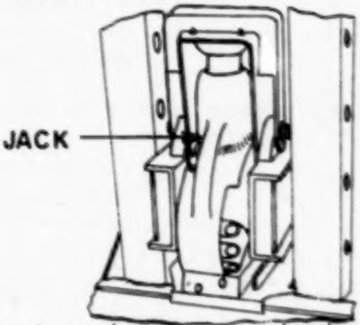


(m) Ensure that the retractable pins are pushed out to lock beam into supports once fixed pins are butted against posts of support.

(n) Slide the roller beam under the rear of the bridge. The roller beam is centered under the bridge at least 1.5 ft (0.5 m) from the outside edge of the BSB.

(o) Raise jack hood on each end of roller beam.

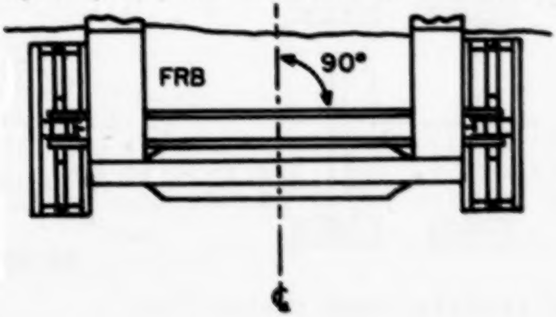




(p) Position a jack on each jack seat and operate jack to raise roller beam 1/2 in.(13 mm).

(q) Lock roller catches.

(r) Ensure that the center of FRB is over centerline of bridge. If it is not, pull on baseplates until center of FRB is directly over FRB peg. Ensure that FRB is at right angle (90°) to centerline of bridge.



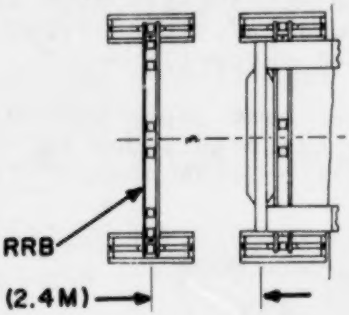
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

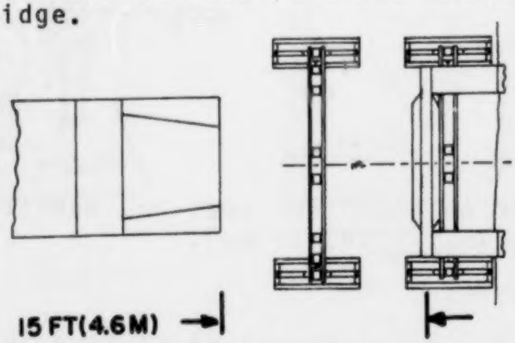
(s) Operate jacks in roller beam until the weight of the bridge is on the roller beam and off of the packing. Remove packing.

(t) Position the roller beam at the height desired for de-launch. During this positioning, level the roller beam using a carpenters level.

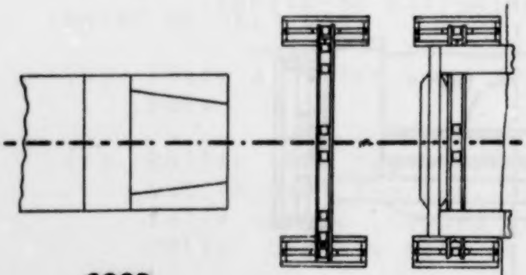
⑬ Assemble and position the rear roller beam (RRB) over the centerline 8 ft.(2.4 m) from the BSB.



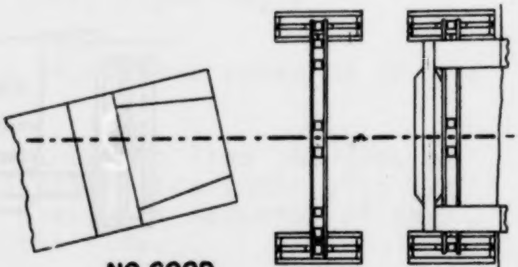
⑭ Move vehicle into position about 15 ft (4.6 m) from end of bridge.



(a) Ensure vehicle is straight with bridge.



GOOD



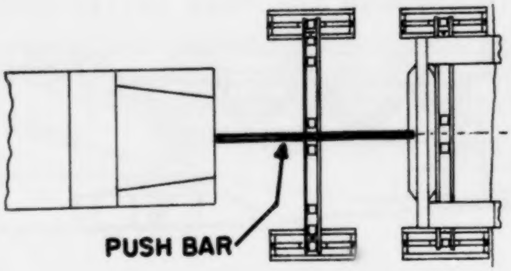
NO GOOD

(b) Center vehicle over centerline.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

⑮ Connect vehicle to bridge with long push bar.



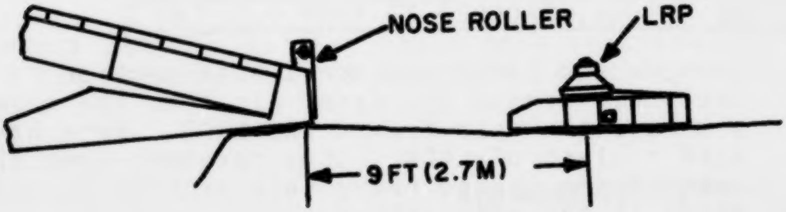
NOTE

The bridge will be held in position by the vehicle and the locked rollers of the roller beam during the assembly of the launching nose.

⑯ To assemble launching nose:

(a) Pin launching nose roller to far bank BSB with nose pin, and secure with retainer clip.

(b) Place landing roller pedestal (LRP) 9 ft (2.7 m) from BSB. This distance is measured from nose roller to center of landing roller.

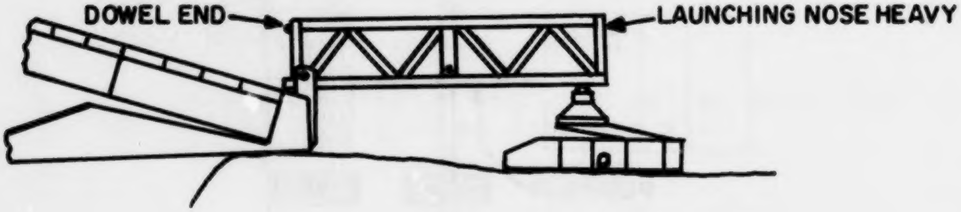


(c) Place partly raised [about 6 in.(15.0 cm)] 15 ton jack in the LRP. Ensure that the jack is seated in base of LRP and that the hood of LRP is on head of jack correctly.

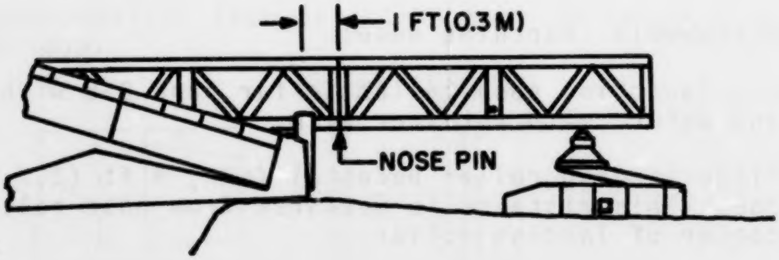
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(d) Place first heavy nose section on nose roller and LRP. Dowel end of nose unit faces cross girder. Place a panel pin through the nose roller and nose section.

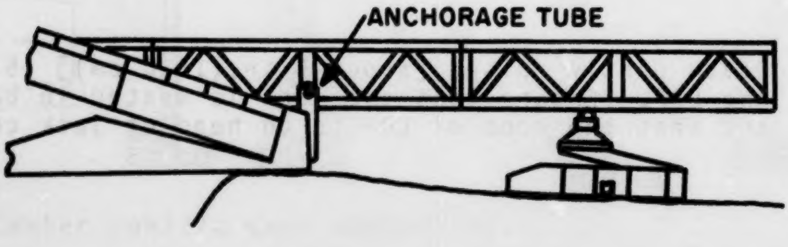


(e) Connect and pin second heavy nose section to first section. Remove the panel pin from the nose roller and move the nose toward the LNCG. Stop movement when the nose pin is within 1 ft (0.3m) of the nose roller. Place a panel pin through the nose roller and nose section.



For 2E + 1 bay bridge, PROCEED TO STEP 2.a. ⑱.

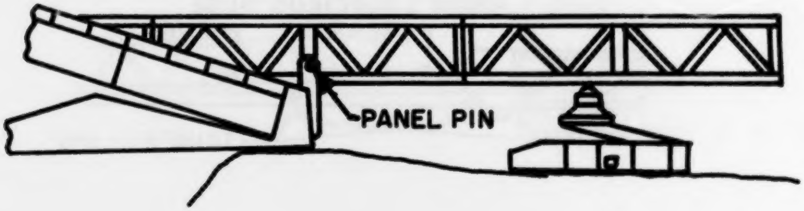
(f) Connect and pin third heavy nose section to second section. Remove the panel pin from the nose roller and move the nose toward the LNCG. Nose has to be guided into rollers of LNCG. Stop movement when the anchorage tube of the second heavy nose section is aligned with the holes in the nose roller.



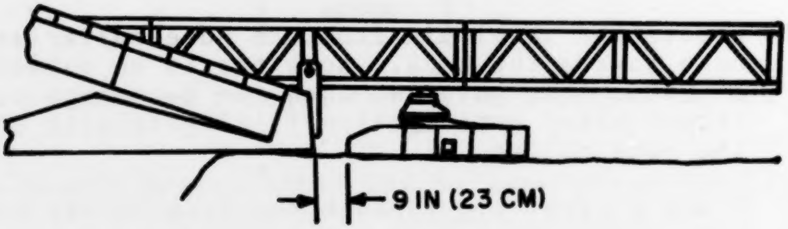
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(g) Place a panel pin through the nose roller and anchorage tube of second nose section. Secure with retainer clip.



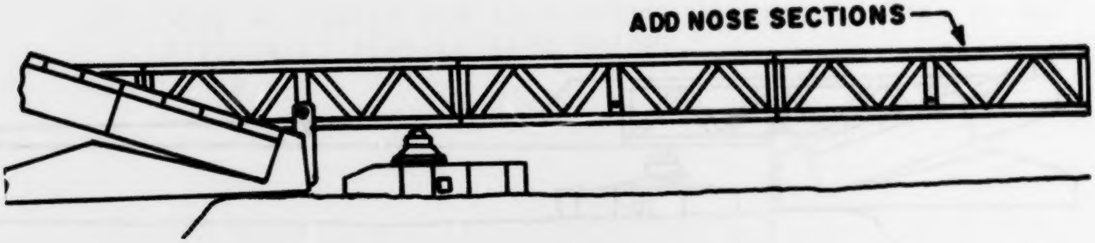
(h) Move the LRP toward the BSB until the base of LRP is within 9 in.(23 cm) of BSB.



NOTE

The remaining nose sections (heavy and light) may not be put on until de-launch begins. This would be the case if the site conditions were restricted on the far bank.

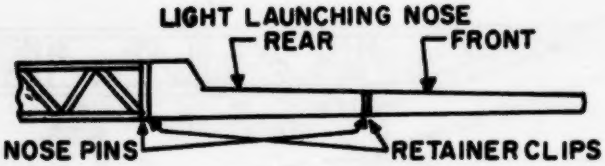
⑰ Connect and pin as many heavy nose sections as is needed for the bridge. Do not move the launching nose into the LNCG.



2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

⑱ Connect and pin light nose sections to the last heavy nose section. Secure with retainer clip.

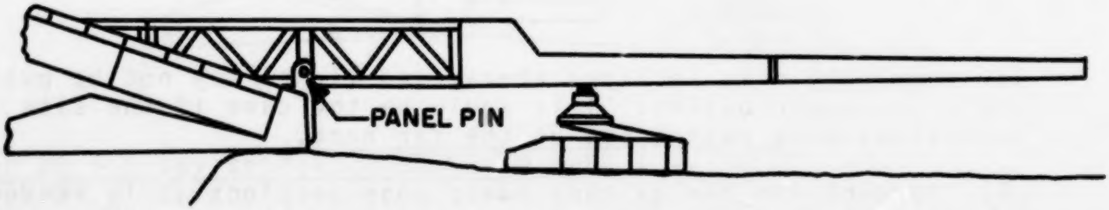


For 2E + 2 thru 2E + 12 bay bridges, PROCEED TO STEP 2.a. ⑳.

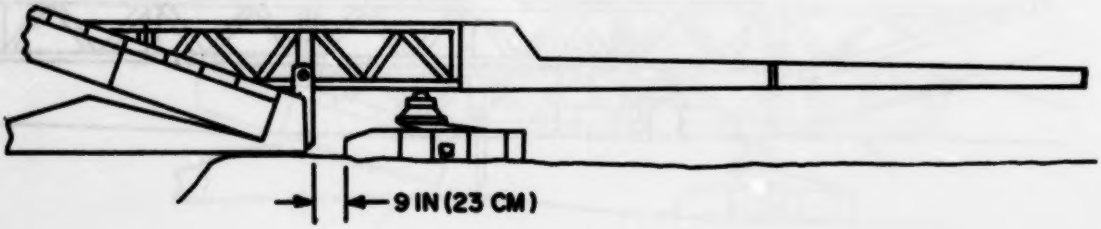
⑲ To complete 2N1 launching nose:

(a) Remove the panel pin from the nose roller and move the nose toward the LNCG. Nose has to be guided into rollers of LNCG. Stop movement when the anchorage tube of the second heavy nose section is aligned with the holes in the nose roller.

(b) Place a panel pin through the nose roller and anchorage tube of second nose section. Secure with retainer clip.



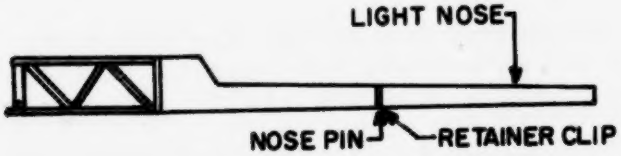
(c) Move the LRP toward the BSB until the base of LRP is within 9 in.(23 cm) of BSB.



2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(d) Connect and pin light nose front section to the light nose rear section. Secure with retainer clip.



⑳ Using LRP, raise bridge off ground until jack is fully extended.

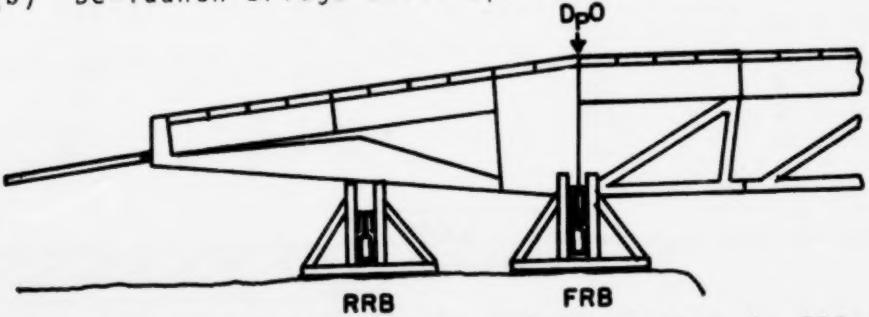
NOTE

Vehicle is holding bridge, and roller catches in FRB are locked.

㉑ De-launch bridge until DpO is over the center of FRB.

(a) Unlock roller catches on FRB.

(b) De-launch bridge until DpO is over FRB.



(c) Stop de-launch and lock roller catches in FRB. DO NOT DISCONNECT VEHICLE FROM BRIDGE.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

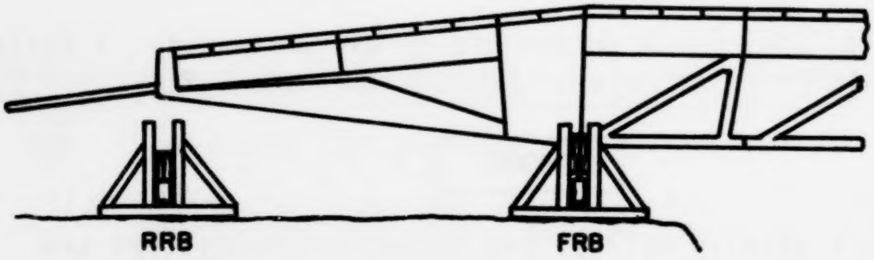
Step 2.a. (Cont).

㉒ Position the RRB under the end of bridge.

(a) Slide the RRB toward the BSB.

(b) Center the rollers of the RRB under the pin, connecting the BSB to the last top panels. Ensure that the center of the RRB is over the centerline.

(c) Unlock the roller catches in the RRB.



㉓ Continue de-launch to panel point given below for bridge being disassembled.

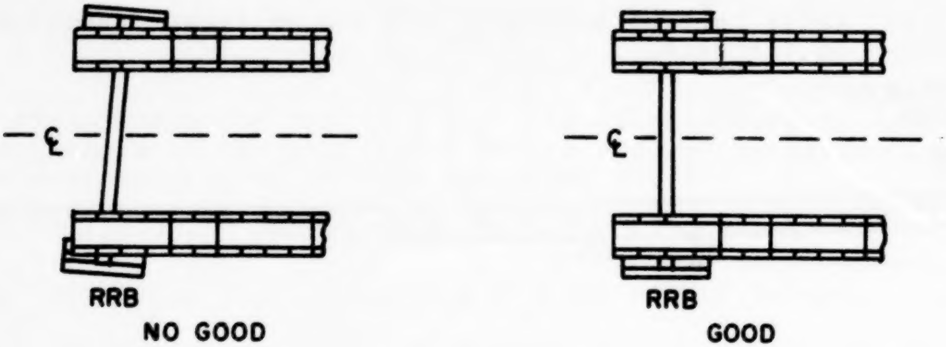
Bridge	Panel Point	Bridge	Panel Point
2E + 1	1p0	2E + 7	3p6
2E + 2	1p2	2E + 8	3p7
2E + 3	1p6	2E + 9	4p3
2E + 4	2p3	2E + 10	5p0
2E + 5	2p5	2E + 11	5p2
2E + 6	3p1	2E + 12	5p6

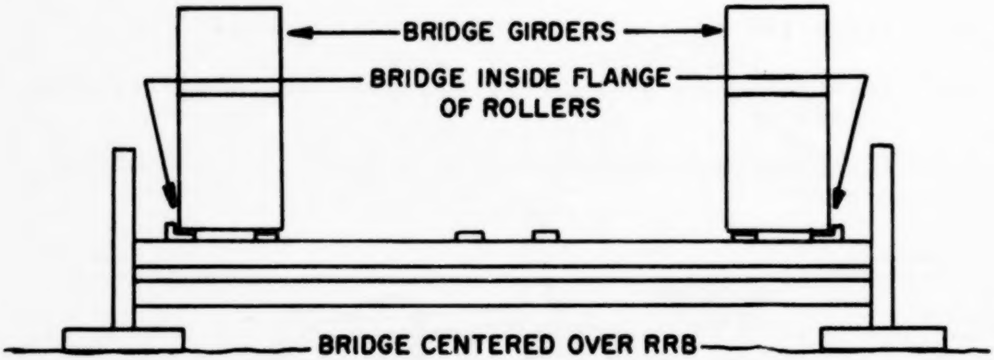
NOTE

The center of gravity of the bridge is over the FRB. It is at this point that any minor adjustments in the RRB placement must be made. Ensure that the bridge will come to rest on the roller beams correctly. The bridge should rest between the flanges of the rollers, not on top of them.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

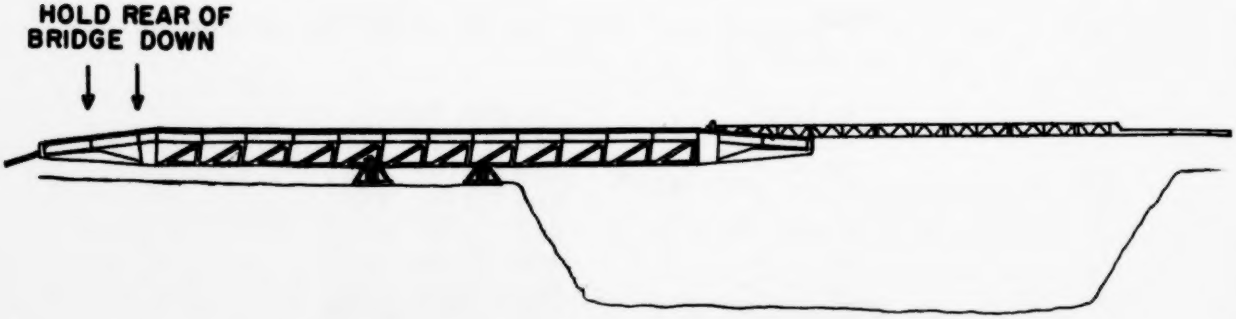
Step 2.a. (Cont).





㉔ Recover LRP.

(a) Hold rear of bridge down on FRB and RRB.



(b) Operate jack in LRP to lower it.

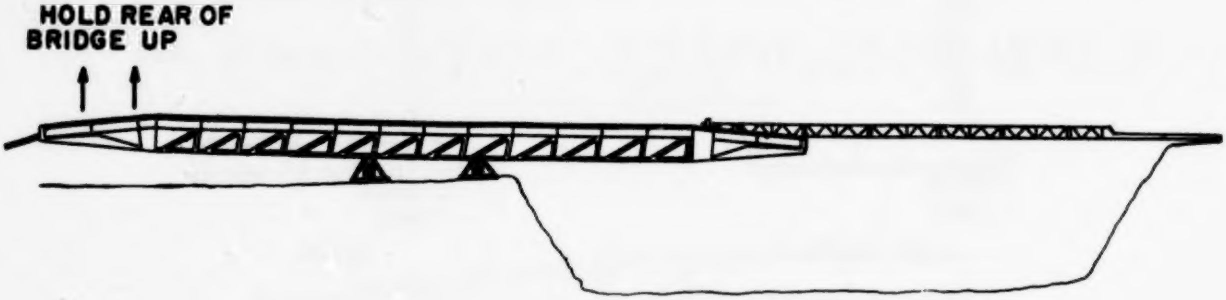
(c) Remove LRP from under launching nose, and remove the jack.

(d) Place jack and handle into the closed LRP.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

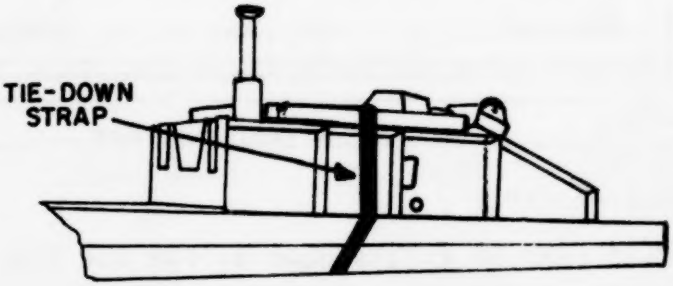
(e) Raise rear of bridge to put tip of light launching nose on far bank.



(f) Place LRP on top of light launching nose.

(g) Secure LRP to nose using a 5,000 lb. cargo tie-down strap.

(h) Far bank crew returns to near bank.



㉕ Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 1	1p3 (over RRB)
2E + 2	1p6 (over RRB)
2E + 3	2p4 (over RRB)
2E + 4 and 2E + 5	3p0 (over RRB)
2E + 6	4p0 (over RRB)
2E + 7	4p4 (over RRB)
2E + 8 and 2E + 9	4p6 (over RRB)
2E + 10	5p7 (over RRB)
2E + 11 and 2E + 12	6p1 (over RRB)

㉖ Level both roller beams with a carpenter level, if available. If level is not available use string method in Step 2.a. 27 .

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

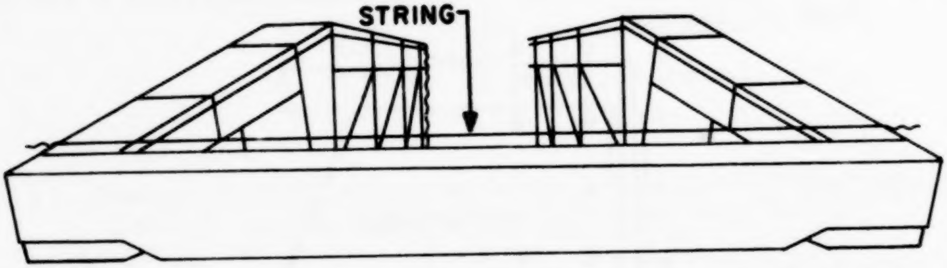
NOTE

To disassemble the end of bridge, it is necessary to level the two girders on the same plane and to reduce the girder toe-in. The procedure to do this is described in.

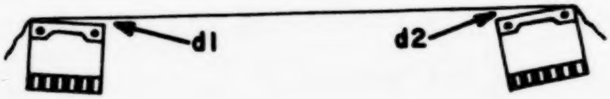
Step 2.a. ㉛ (a) through (c).

㉗ To reduce girder toe-in and level end of bridge.

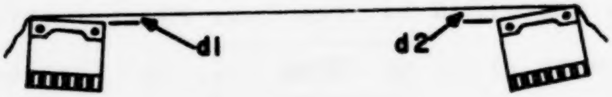
(a) Hold a piece of string across the same point of the top panels as shown.



(b) Check gaps at points d1 and d2. These gaps must be the same before girders are considered level.



(c) To increase gap at d1, lower RRB or raise FRB on that side of bridge.

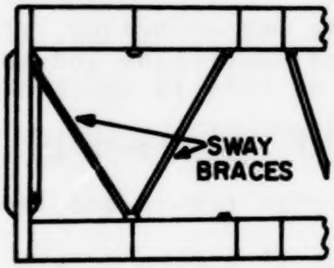


2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

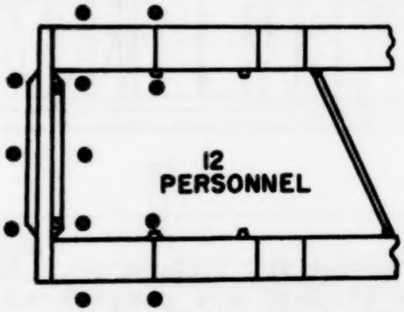
Step 2.a. (Cont).

㉘ Release ETP from BSB.

(a) Remove sway braces from the end of bridge.



(b) Position 12 personnel on the end taper panels and bankseat beam as shown.



(c) With all 12 personnel, lift end taper panels and bankseat beam.

(d) Remove panel pin connecting the ETP to the BSB.

(e) Lower ETP to the ground.

NOTE

There are two acceptable methods used to disassemble the end of bridge. One is called the Big U, the other is simply piece by piece disassembly.

The big U is described in Step 2.a. 29 (a) through (k)

and the piece by piece in Step 2.a. 30 (a) through (h).

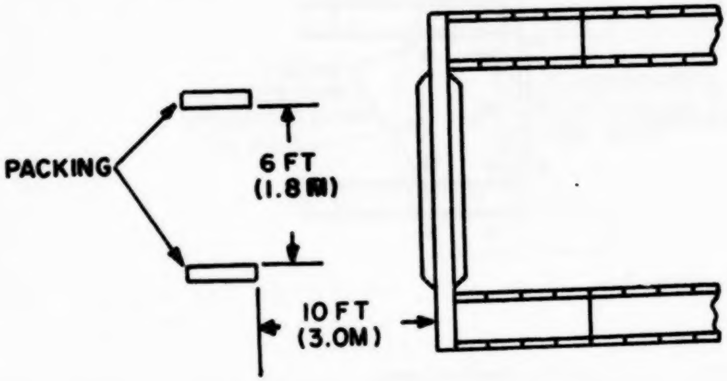
The method used is determined by the NCOIC. The Big U method requires 12 personnel to lift the 1330 lb. end of bridge at least waist high and walk with it. Caution should be used if this method is used.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

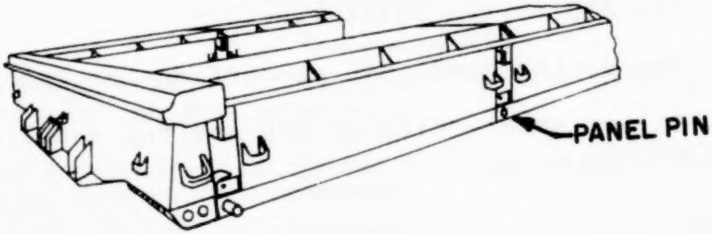
㉙ To disassemble the end of bridge using the Big U method.

(a) Place 2 pieces of packing about 6 ft (1.8 m) apart 10 ft (3.0 m) from the rear of the end taper panels.



(b) Remove the retainer clip from the end of the panel pin connecting top panel F to top panel E.

(c) Remove the panel pin from top panel E and top panel F.



NOTE

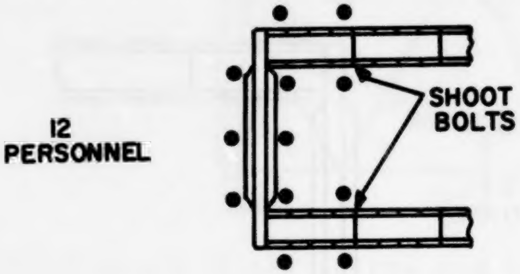
It may be necessary to lift the Big U slightly to remove the panel pins in the top panels. This is because the weight of the Big U over compresses the guide bushings.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

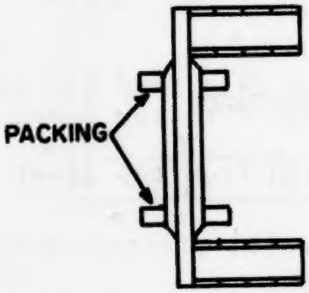
(d) Lift the Big U using 12 personnel positioned as shown.

(e) When butting surfaces contact each other, lift and turn shoot bolts to unlock them.



(f) Remove the Big U.

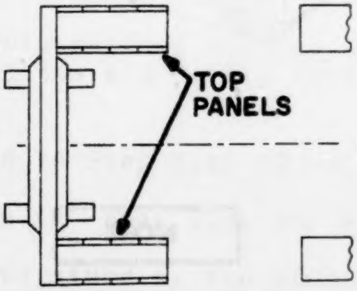
(g) Place the Big U on the packing.



(h) Remove the retainer clip from the panel pin connecting the BSB to top panel F.

(i) Remove the panel pin connecting the BSB to top panel F.

(j) Unlock shoot bolts of BSB and top panel F and remove top panel.



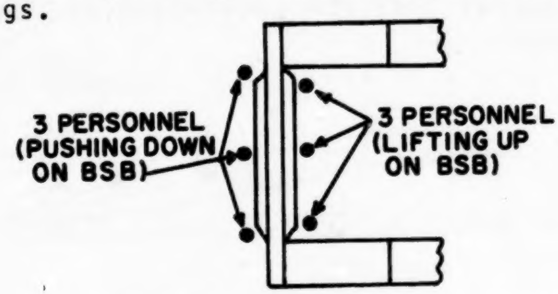
(k) Remove BSB and packing from site.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

㉚ To remove the end of bridge using piece by piece method.

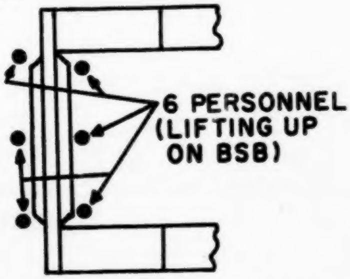
(a) With 3 personnel lifting on inside of bankseat beam, and 3 personnel pushing down on the outside of beam compress bushings.


3 PERSONNEL (PUSHING DOWN ON BSB)
3 PERSONNEL (LIFTING UP ON BSB)

(b) Remove the retainer clip from the panel pin connecting the BSB to top panel F.

(c) Remove the panel pin connecting the BSB to top panel F.

(d) With all 6 personnel lifting on the BSB, unlock the shoot bolts and remove BSB.



(e) Remove the retainer clip from the panel pin connecting top panel F to top panel E.

(f) Remove the panel pin connecting top panel F to top panel E.

(g) Lift top panel F slightly, unlock the shoot bolts and remove top panel F.

(h) Repeat steps (e) through (g) to remove top panel E.

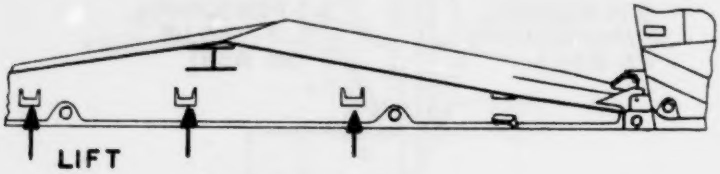
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

㉛ Removing ETP.

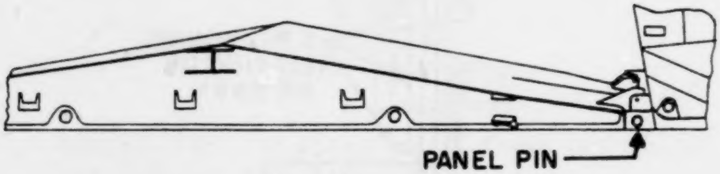
(a) Remove retainer clip from panel pin.

(b) Six personnel lift ETP until compression bushing is compressed.



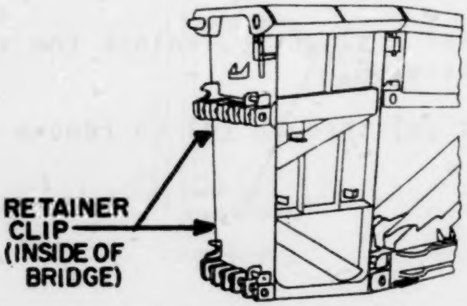
(c) Remove panel pin from ETP.

(d) Remove ETP from junction panel.



㉜ To remove junction panel:

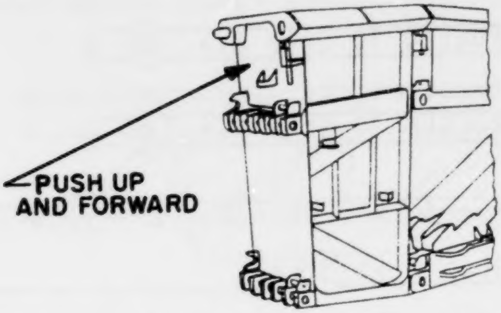
(a) Remove retainer clips from both panel pins.



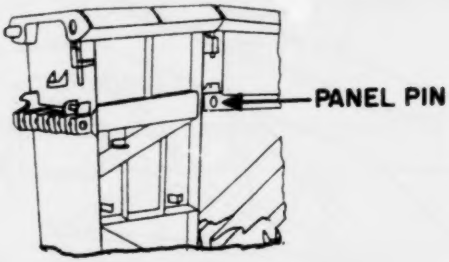
(b) Three men push up and forward on rear of junction panel.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

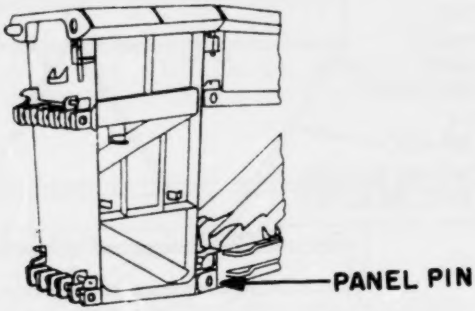
Step 2.a. (Cont).



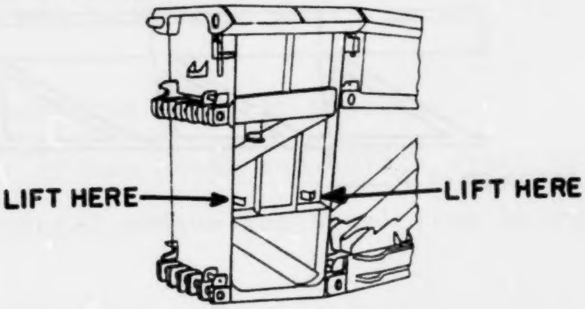
(c) Remove panel pin from upper pin hole of junction panel.



(d) Remove panel pin from bottom pin hole in junction panel.



(e) Four personnel lift junction panel and unlock shoot bolts. Remove panel from end of bridge.



2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

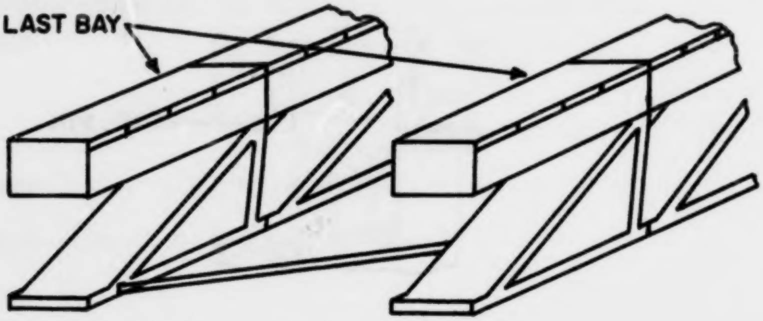
Step 2.a. (Cont).

For 2E + 1 bay bridge, PROCEED TO Step 2.a. (53).

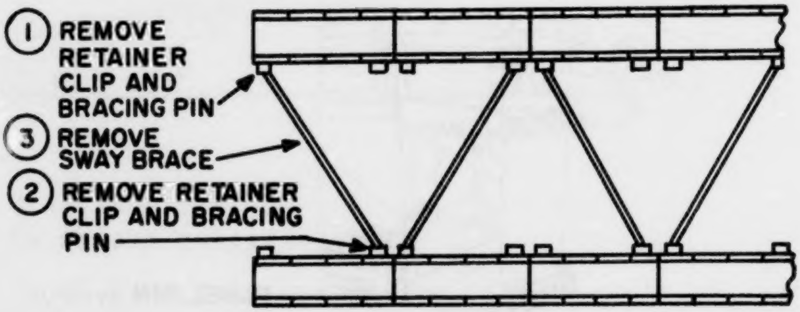
For 2E + 2 bay bridge, PROCEED TO Step 2.a. (52).

For 2E + 3 and 2E + 4, 2E + 6 thru 2E + 8, 2E + 10 and 2E + 11 bay bridges, PROCEED TO Step 2.a. (34).

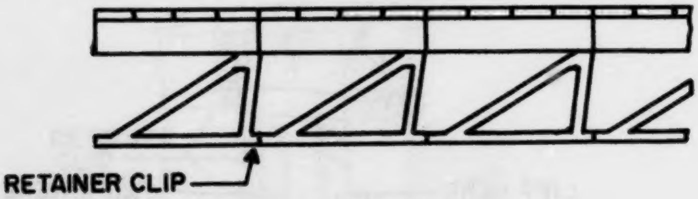
(33) Remove last bay of bridge.



(a) Remove sway brace from bay.


① REMOVE RETAINER CLIP AND BRACING PIN
③ REMOVE SWAY BRACE
② REMOVE RETAINER CLIP AND BRACING PIN

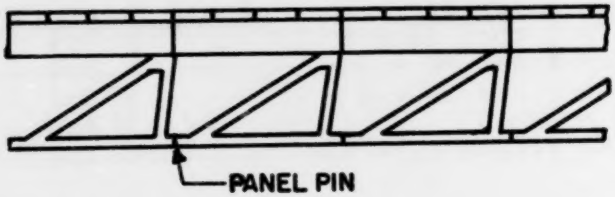
(b) Remove retainer clip from bottom panel pin.



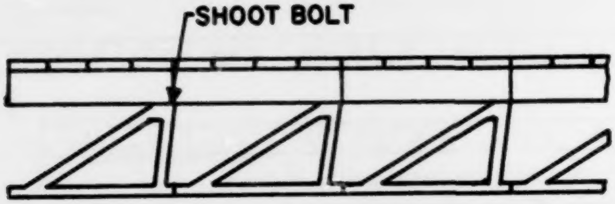
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

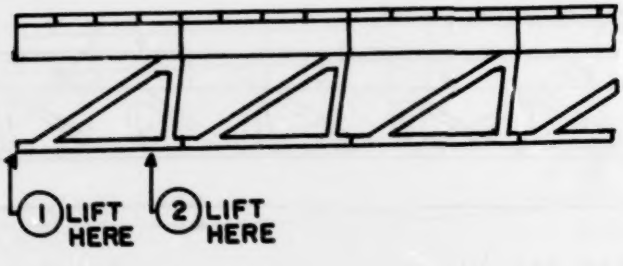
(c) Remove bottom panel pin.



(d) Open upper shoot bolts of bottom panel.



(e) Four personnel lift bottom panel. The two personnel on the small end of the panel lift first. Bottom panel will disengage from other bottom panel and upper jaws will disengage from panel pin in top panel. Move panel from under girder.



(f) Remove panel pin from top panels.

(g) Lift rear of top panel and unlock shoot bolts.

(h) Four personnel remove top panel from bridge.

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

㉞ Boom bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over RRB)
2E + 3 thru 2E + 5	1p4
2E + 6 and 2E + 7	3p0
2E + 8 and 2E + 9	3p2
2E + 10	4p6
2E + 11 and 2E + 12	4p4

㉟ Disconnect vehicle from bridge. Move vehicle at least 20 ft.(6.1m) from rear of bridge.

For 2E + 3 bay bridge, PROCEED TO Step 2.a. (52).

For 2E + 4 and 2E + 5 bay bridges, PROCEED TO Step 2.a. ㊽.

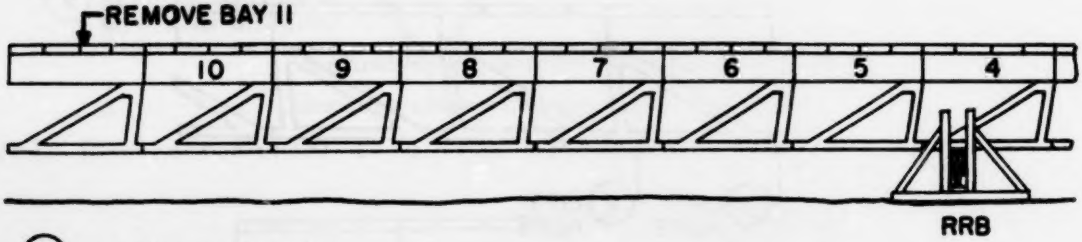
For 2E + 6 bay bridge, PROCEED TO Step 2.a. ㊹.

For 2E + 7 bay bridge, PROCEED TO Step 2.a. ㊸.

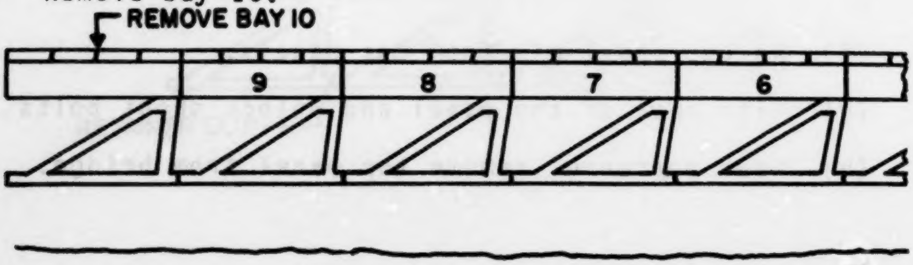
For 2E + 8 and 2E + 9 bay bridges, PROCEED TO Step 2.a. ㊵.

For 2E + 10 bay bridge, PROCEED TO Step 2.a. ㊲.

㊱ Remove bay 11.



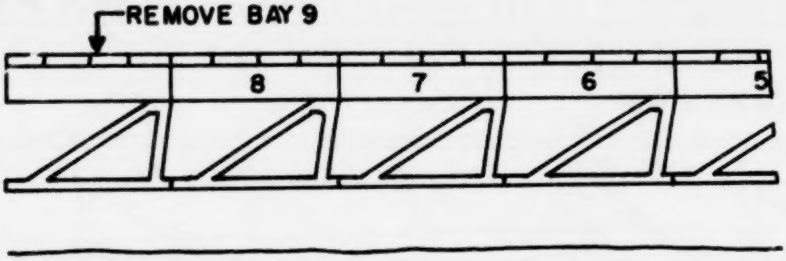
㊲ Remove bay 10.



2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

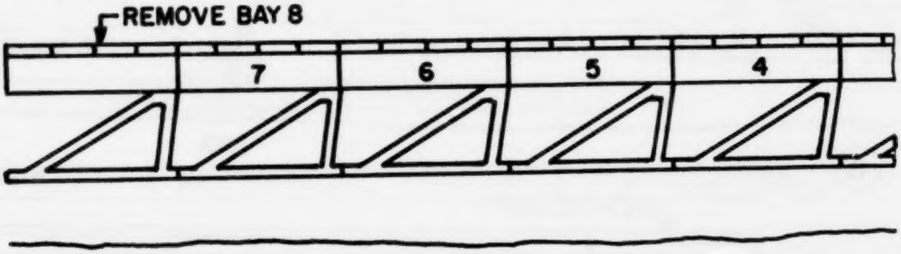
(38) Remove bay 9.



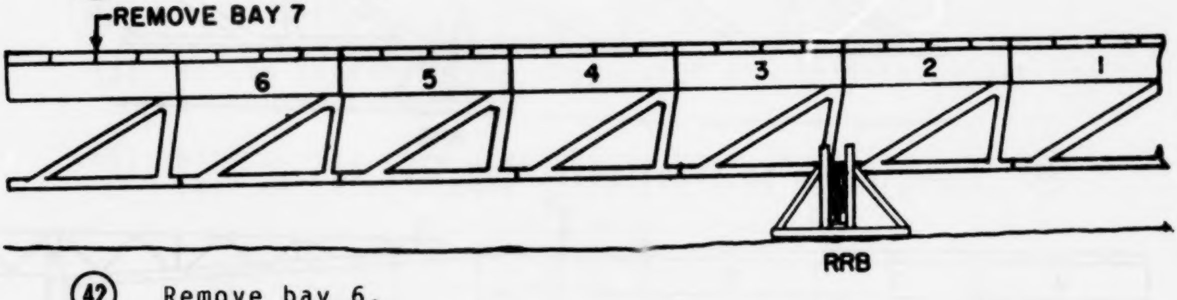
(39) Boom to panel point given below for bridge being disassembled.

Bridge	Panel Point (over RRB)
2E + 10	3p2
2E + 11 and 2E + 12	3p0

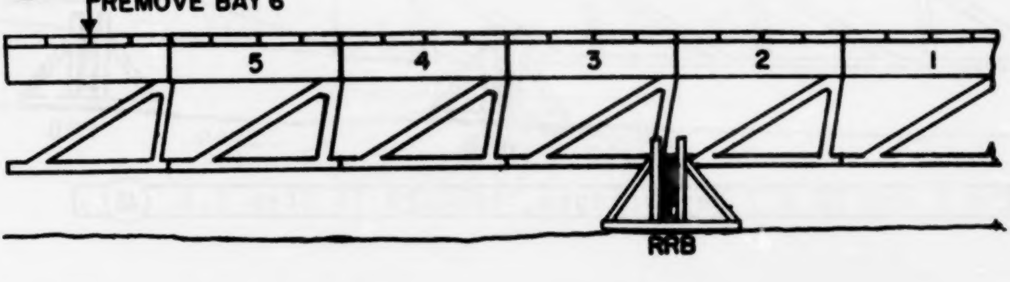
(40) Remove bay 8.



(41) Remove bay 7.



(42) Remove bay 6.

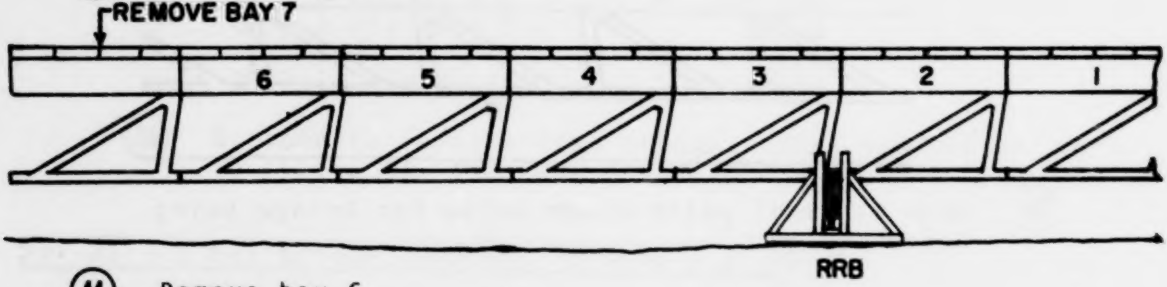


2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

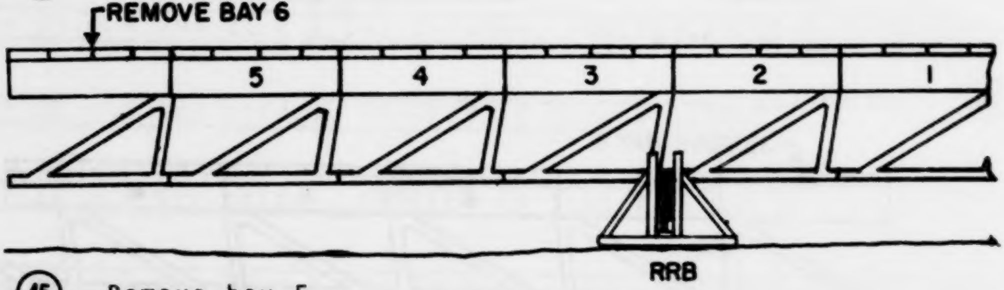
Step 2.a. (Cont).

For 2E + 8 thru 2E + 12 bay bridges, PROCEED TO Step 2.a. ㊻.

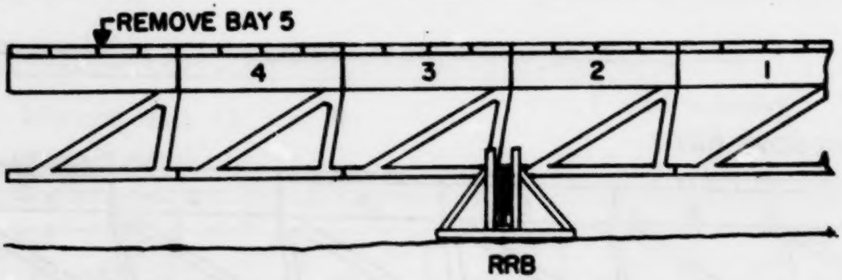
㊸ Remove bay 7.



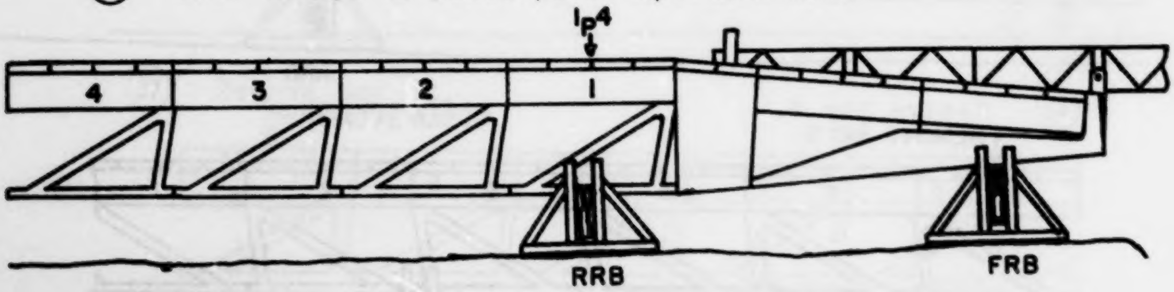
㊹ Remove bay 6.



㊺ Remove bay 5.



㊻ Boom bridge to panel point 1p4 over RRB.

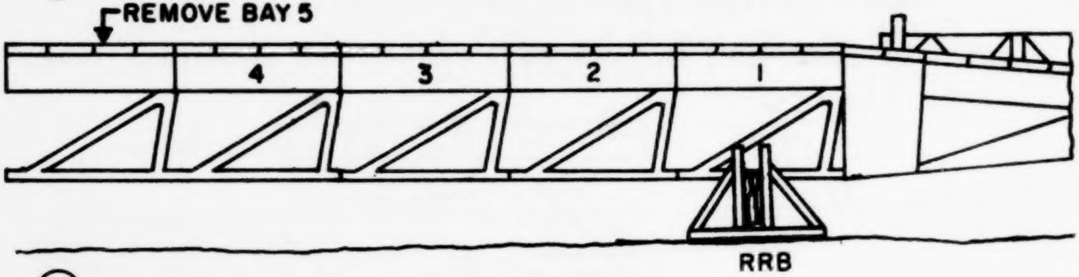


For 2E + 6 and 2E + 7 bay bridges, PROCEED TO Step 2.a. ㊽.

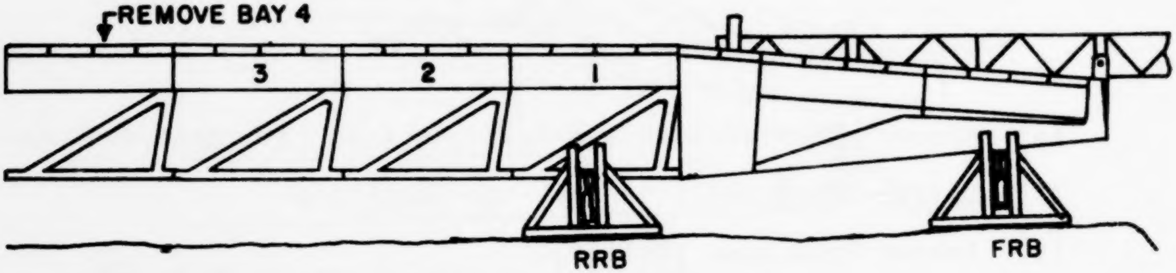
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

㊼ Remove bay 5.



㊽ Remove bay 4.



For 2E + 4 bay bridge, PROCEED TO Step 2.a. ㊷ .

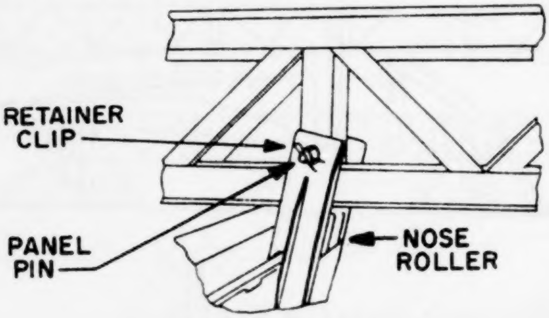
For 2E + 5 thru 2E + 7 bay bridges, PROCEED TO Step 2.a. (51) .

For 2E + 8 thru 2E + 10 bay bridges, PROCEED TO Step 2.a. ㊿ .

㊾ Remove sixth nose section (6N1).

(a) Remove retainer clip from panel pin in nose roller and anchorage tube.

(b) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.

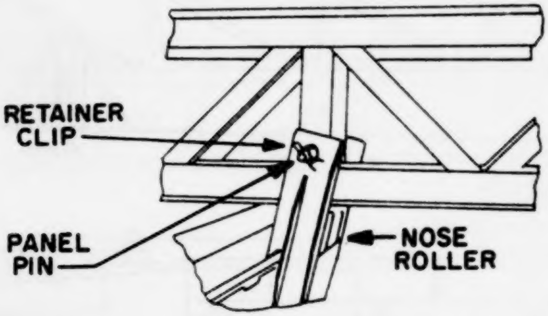


2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(c) Move launching nose to the rear until the next anchorage tube is slightly behind nose roller.

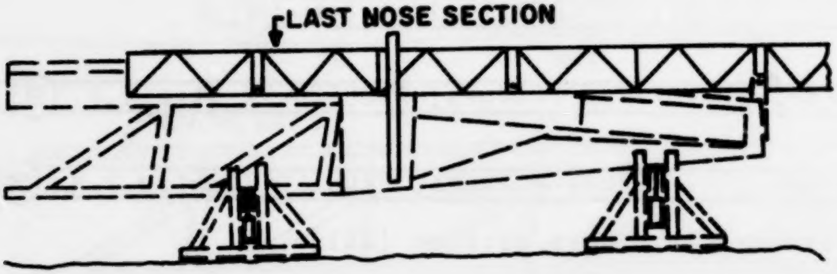
(d) Put panel pin through nose roller and anchorage tube.



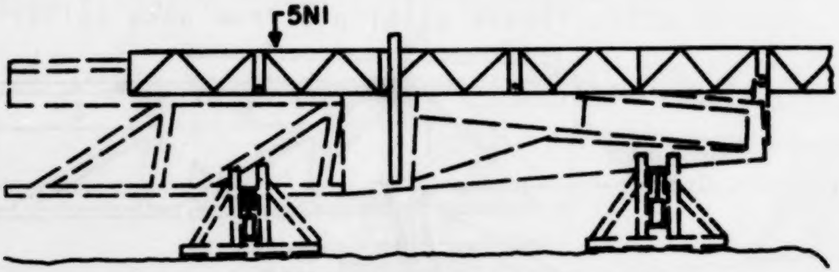
(e) Remove retainer clip and nose pin from last nose sections.

(f) Unlock shoot bolts in last nose section.

(g) Remove last nose section.



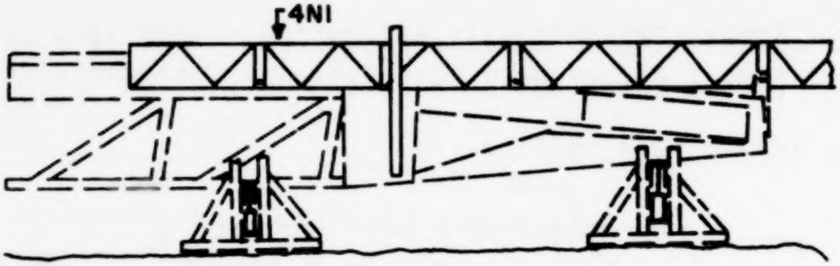
(50) Remove fifth nose section (5N1).



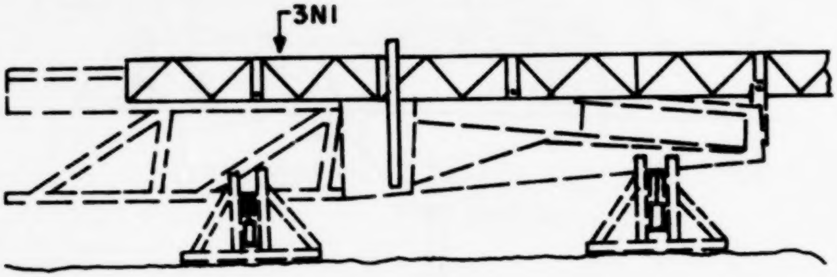
(51) Remove fourth nose section (4N1).

2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

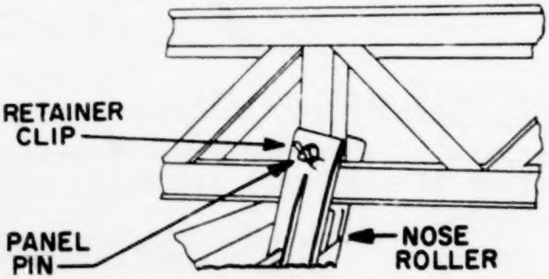


(52) Remove third nose section (3N1).

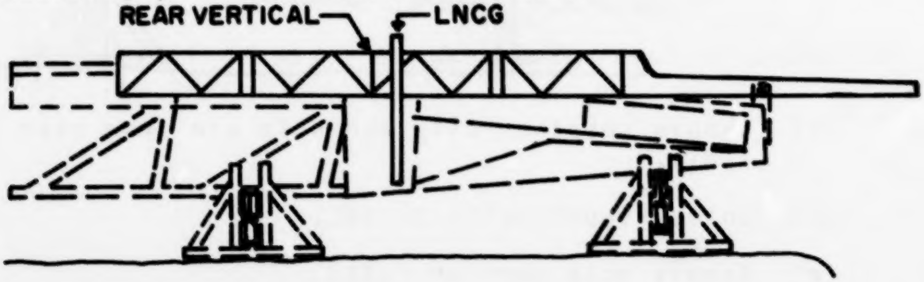


(53) Remove second nose section (2N1).

(a) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.



(b) Move launching nose to rear until the rear vertical of nose section (1N1) has passed the rollers in the LNCG. Put a carrying bar through the nose section. If tip of nose is uphill, place bar in front of rollers; if tip is downhill, place bar behind rollers.



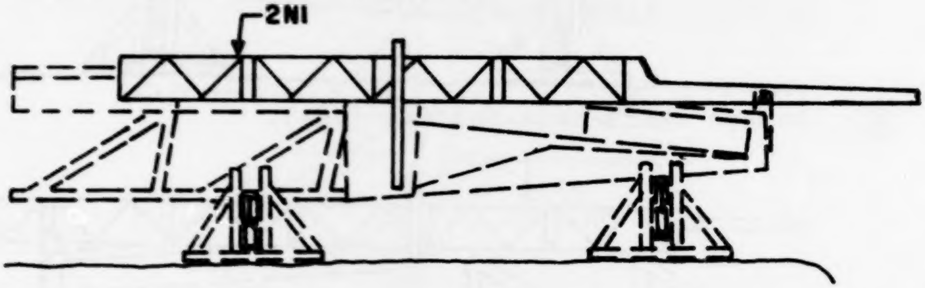
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

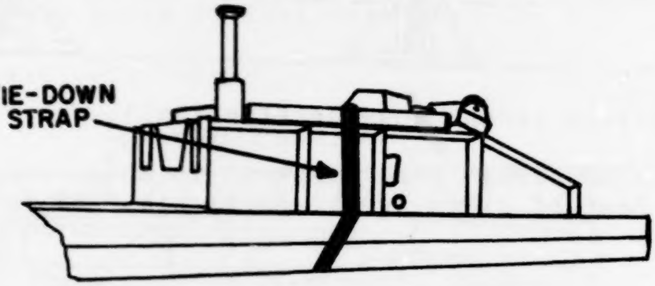
(c) Remove retainer clip and nose pin from 2N1.

(d) Unlock shoot bolts in 2N1.

(e) Remove nose section (2N1).

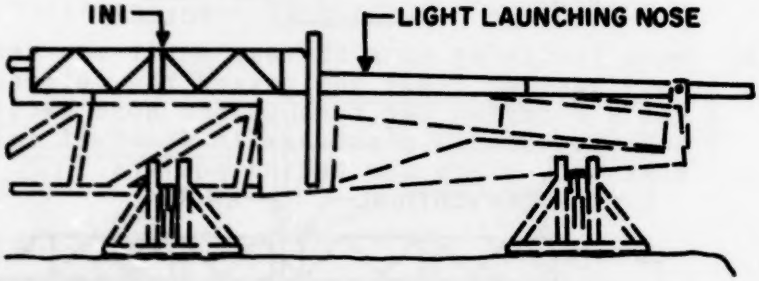


(54) Remove LRP from tip of launching nose.



(55) Remove first nose section (1N1).

(a) Move launching nose toward rear of site. Stop movement when the rear of the light launching nose rear section is over the LNCG.



(b) Remove retainer clip and nose pin from nose section (1N1).

(c) Unlock shoot bolts in 1N1.

(d) Remove nose section (1N1).

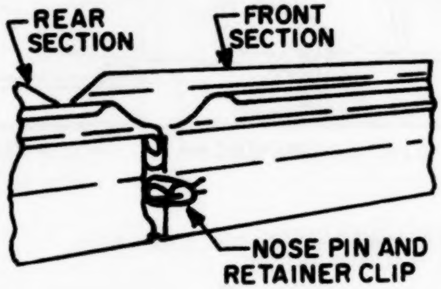
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(56) Remove light launching nose from nose roller and LNCG. Disassemble light launching nose on the ground behind LNCG.

(a) Remove retainer clip and nose pin between nose sections.

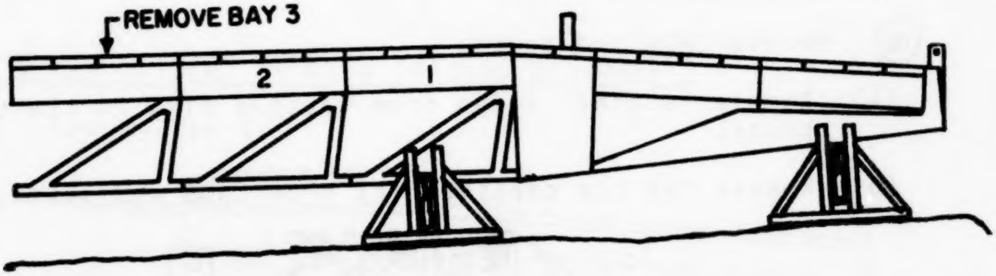
(b) Disengage nose sections from each other.



For 2E + 1 bay bridge, PROCEED TO Step 2.a. (58).

For 2E + 2 bay bridge, PROCEED TO Step 2.a. (58).

(57) Remove bay 3.



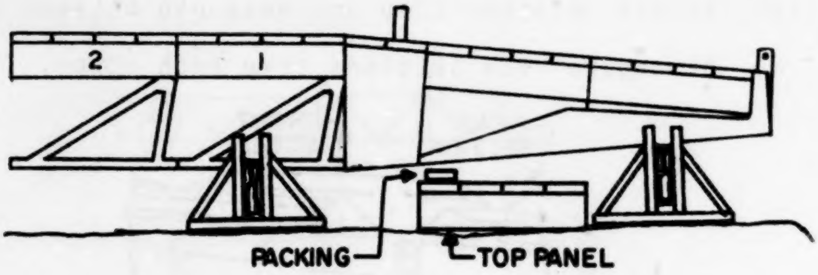
NOTE

Use the top panel from Bay 3 as the panel required under the ETP in Step 2.a. 58 .

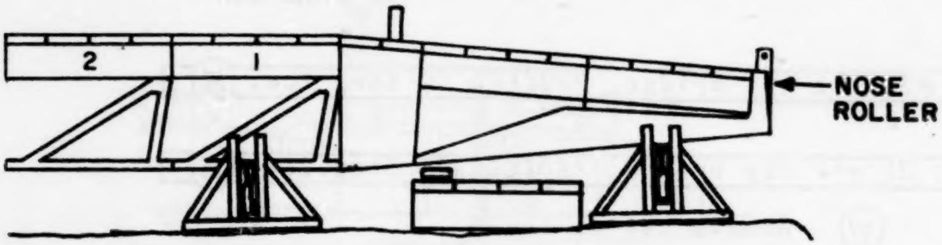
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(58) Position a top panel under the rear of the ETP as shown. Place a piece of packing across the rear of this top panel.



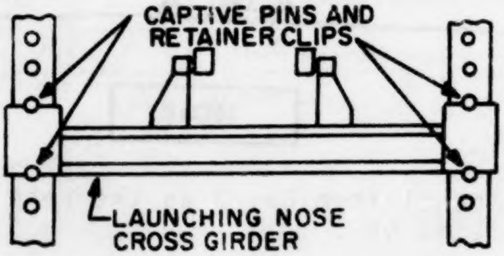
(59) Remove nose roller from the BSB.



(60) Remove LNCG and posts.

(a) Remove retainer clips from captive pins in the LNCG and posts.

(b) Remove the top captive pins from LNCG and posts.



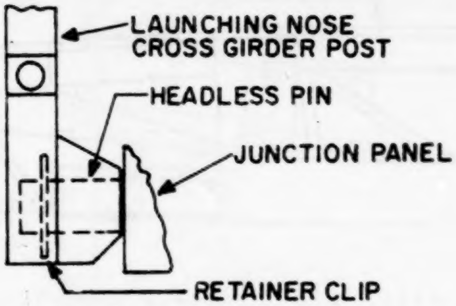
(c) Lift the LNCG at both ends and remove the bottom captive pin.

(d) Let the LNCG slide down the posts until it is free. Remove LNCG.

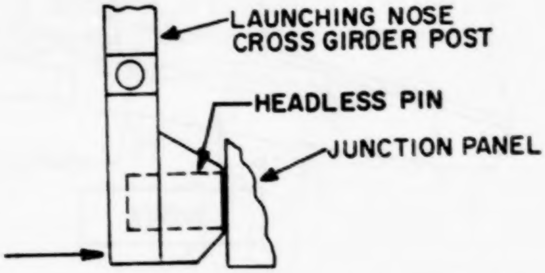
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(e) Remove retainer clips from headless pin in the bottom of the LNCG posts.



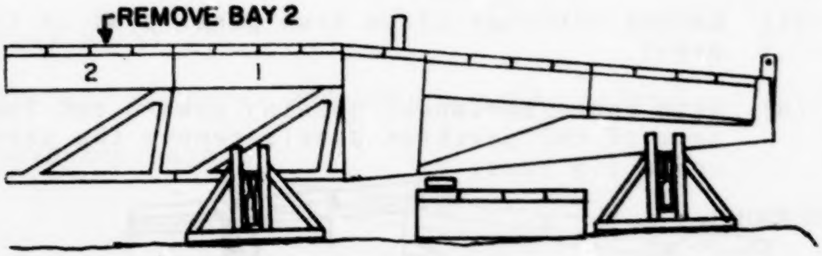
(f) Remove the posts from the headless pins and lug on junction panel.



(g) Remove the headless pins from the junction panel.

For 2E + 1 bay bridge, PROCEED TO Step 2.a. ⑥②.

(61) Remove Bay 2.



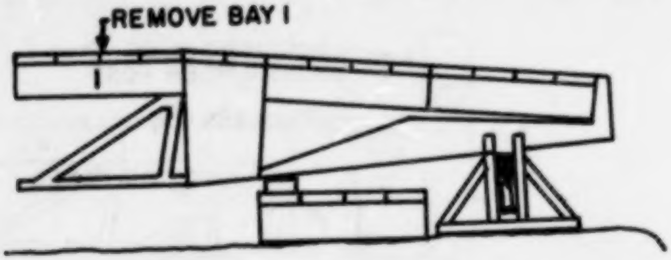
(62) Operate jacks in roller beams to lower both roller beams. RRB should be free from under Bay 1.

(63) Slide RRB from under Bay 1 and disassemble.

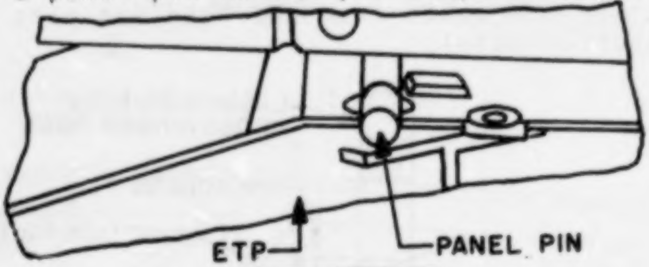
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(64) Remove Bay 1.



(65) Place a panel pin on the pin stops on top of the ETP.



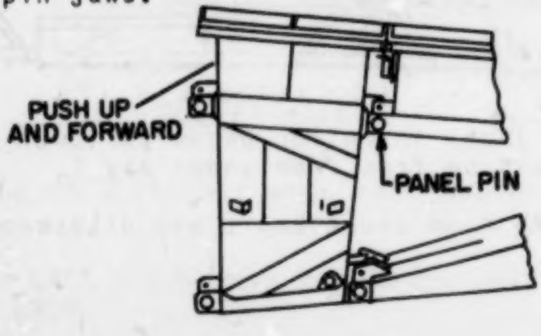
NOTE

Panel pin on pin stops of the ETP reduces the distance that the junction panel will drop when the panel pins are removed from the junction panel. If the pin is not used, the shoot bolts will be difficult to unlock.

(66) Remove junction panel.

(a) Remove retainer clips from panel pins in the junction panel.

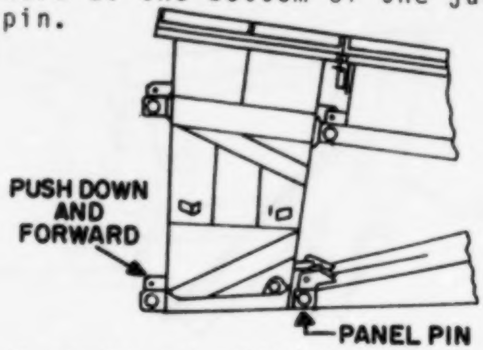
(b) With three personnel pushing upward and forward on the back of the junction panel, remove the panel pin in the upper pin jaws.



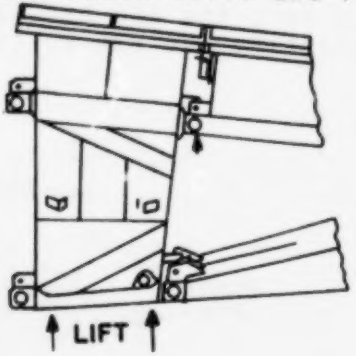
2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(c) Remove panel pin from bottom pin jaws of junction panel. If this pin is not free, use two personnel to push down and forward at the bottom of the junction panel and remove pin.



(d) With four personnel, lift the junction panel straight up. DO NOT ALLOW BOTTOM OF PANEL to slip out of pin jaws in the ETP. Unlock the shoot bolts and remove the junction panel.



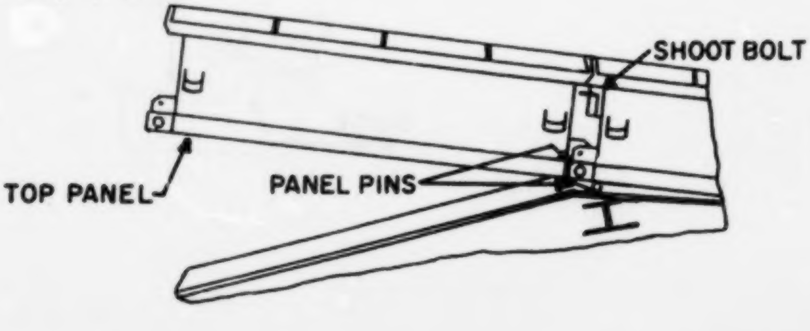
(67) Remove top panel.

(a) Remove retainer clip from panel pin.

(b) Remove panel pin.

(c) Lift rear of panel and unlock shoot bolts.

(d) Remove top panel.

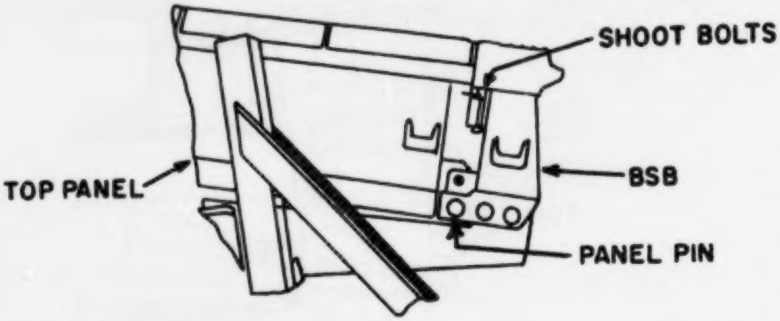


2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

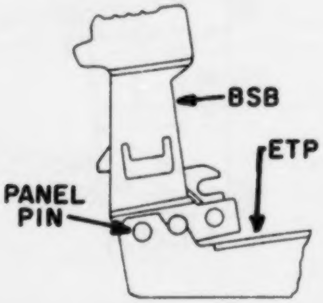
(68) Remove panel pin from pin stops on the ETP.

(69) Remove top panels from the BSB.

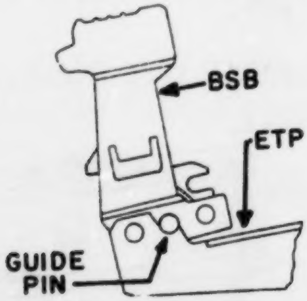


(70) Remove BSB.

(a) With three personnel on each side of BSB, lift and slightly rock the BSB back and forth. Remove the panel pin connecting the BSB to the ETPs. DO NOT REMOVE GUIDE PIN.



(b) Remove BSB from ETPs then remove guide pins.



2-26. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Near Bank) (Cont).

Step 2.a. (Cont).

(71) Remove ETP.

(72) Remove packing and top panels.

(73) Disassemble the FRB.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank)

DISASSEMBLY ON THE ORIGINAL FAR BANK. This paragraph provides the additional or modified steps needed to disassemble the 2E + 1 through 2E + 12 bay MGBs on the original far bank.

This paragraph must be used with paragraph 2-26 to disassemble bridges on the original far bank.

NOTE

The original far bank becomes the new near bank, and the original near bank becomes the new far bank. Also the bays of the bridge must be renumbered from the new far bank. Using a 2E + 12 Bay as an example, what was bay 12 is now bay 1, and what was bay 1 is now bay 12.

All reference to near or far bank from this point will be referring to the new near bank and the new far bank.

NOTE

Move all launching nose components to the far bank, and all the roller beam components to near bank. All pallets must be moved to near bank.

a. Paragraph 2-27 will describe the step by step procedures for disassembly of Double Story - 2E + 1 through 2E + 12 Bay Bridges.

b. The disassembly procedures are basically the reverse of assembly, but there are differences, refer to Table 2 -35. Because of these differences the user is advised to follow the step by step procedures carefully.

c. Once the user becomes familiar with the step by step procedures for disassembly, it will be possible to disassemble any Double Story - 2E + 1 through 2E + 12 bay bridge using the De-Launch Table 2-36.

d. This table provides the necessary instructions to disassemble and de-launch all bridges.

e. DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

TABLE 2-35. Required Steps Per Bridge Length.

2E + 1	2E + 2	2E + 3	2E + 4	2E + 5	2E + 6
For all Double Story bridges - 2E + 1 through 2 E + 12 bay, Perform Steps 1 .a (1) through 2. a (9) of paragraph 2-26, then perform the steps in this paragraph as shown below for the the bridge being disassembled.					
(10) thru (19)	(10) thru (19)	(10) thru (19)	(10) thru (19)	(10) thru (19)	(10) thru (19)
For all bridges, Perform Steps 2.a (26) and (27) of paragraph 2-26, then return to paragraph 2-27.					
(20)	(20)	(20)	(20)	(20)	(20)
For all bridges, Perform Steps 2.a (28) thru (31) of paragraph 2-26, then return to paragraph 2-27					
(21)	(21)	(21)	(21)	(21)	(21) thru (25)
(39)	(39)	(38) and (39)	(38) thru (45)	(38) thru (45)	(38) thru (45)
(44) and (45)	(41)	(41) thru (45)			
	(43) thru (45)				

2E + 7	2E + 8	2E + 9	2E + 10	2E + 11	2E + 12
For all Double Story bridges - 2E + 1 through 2E + 12 bay, Perform Steps 1. a (1) through 2. a (9) of paragraph 2-26, then perform steps in this paragraph as shown below for the bridge being disassembled.					
(10) thru (19)	(10) thru (19)	(10) thru (19)	(10) thru (19)	(10) thru (19)	(10) thru (19)
For all bridges, Perform Steps 2.a (26) and (27) of paragraph 2-26, then return to paragraph 2-27.					
(20)	(20)	(20)	(20)	(20)	(20)
For all bridges, Perform Steps 2.a (28) thru (31) of paragraph 2-26, then return to paragraph 2-27					
(21) thru (27)	(21) thru (23)	(21) thru (25)	(21) thru (23)	(21) thru (25)	(21) thru (45)
(38) thru (45)	(28) thru (32)	(28) thru (32)	(28) thru (45)	(28) thru (45)	
	(38) thru (45)	(38) thru (45)			

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

TABLE 2-36. DE-LAUNCH TABLE. - 2E + 1 through 2E + 12 Bay Double Story (Normal Site - Original Far Bank).

Bridge ft. Length m	37 11.3	43 13.1	49 14.9	55 16.8	61 18.6	67 20.4
2E + No. of Bays	1	2	3	4	5	6
Nose Construction	2N1	3N1	3N1	3N1	4N1	4N1
Build	Notes a, b, and c	Notes a, b, and d	Notes a, b, and d	Notes a, b, and d	Notes a, b, d, and e	Notes a, b, d, and e
De-Launch To and Add	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB
De-Launch To and Recover	1p0 LRP	1p2 LRP	1p6 LRP	2p3 LRP	2p5 LRP	3p1 LRP
Boom To and Remove (CG)	1p3 E (Bp7)	1p6 E (Bp5)	2p4 E (Bp0)	3p0 E (Ap1)	3p0 E (1p2)	4p0 E (1p6)
Boom To and Remove (CG)						3p0 6 and BP5 (1p0)
Boom To and Remove (CG)	2N1 (Bp3)	3N1, Pin at 'A' and BP2 (Bp1)	1p7 3N1, Pin at 'A' and BP3 (Ap2)	1p7 BP4 and 3N1 (1p3)	1p7 TP5, BP4 and 4N1 (1p3)	1p7 TP5, BP4 and 4N1 (1p3)
Boom To and Remove				2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'
Boom To and Remove			1p4 TP3 and BP2	1p4 TP4, 3, and BP2	1p4 TP4, 3, and BP2	1p4 TP4, 3, and BP2
Remove	RRB and 1	RRB, TP2, and 1	RRB, TP2, and 1	RRB, TP2, and 1	RRB, TP2, and 1	RRB, TP2, and 1
Complete By:	Note f	Note f	Note f	Note f	Note f	Note f

NOTES:
- a. Position FRB under RBSB.
- b. Position center of LR (LRP) 9 ft (2.7 m) from BSB.
- c. For 2E + 1 only. Add 2 LNH and LLN rear section. Re-position LRP [base 9 in (23 cm) from BSB].
- d. For 2E + 2 thru 2E + 12. Add 3LNH. Re-position LRP [base 9 in (23 cm) from BSB].
- e. Add remaining nose sections.
- f. Disassemble E and FRB. Clear site.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

TABLE 2-36. DE-LAUNCH TABLE. - 2E + 1 through 2E + 12 Bay Double Story (Normal Site - Original Far Bank) (Cont).

Bridge ft. Length m	73 22.3	79 24.1	85 25.9	91 27.7	97 29.6	103 31.4
2E + No. of Bays	7	8	9	10	11	12
Nose Construction	4N1	5N1	5N1	5N1	6N1	6N1
Build	Notes a, b, d, and e	Notes a, b, d, and e	Notes a, b, d, and e	Notes a, b, d, and e	Notes a, b, d, and e	Notes a, b, d, and e
De-Launch To and ADD	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB	Dp0 RRB
De-Launch To and RECOVER	3p6 LRP	3p7 LRP	4p3 LRP	5p0 LRP	5p2 LRP	5p6 LRP
Boom To and REMOVE (CG)	4p4 E (1p6)	4p6 E (2p3)	4p6 E (2p7)	5p7 E (3p3)	6p1 E (3p7)	6p1 E (4p3)
Boom To and REMOVE (CG)				4p6 BP10 (3p3)	4p6 11 and BP10 (3p5)	4p6 12, 11, and BP10 (3p1)
Boom To and REMOVE (CG)		3p6 BP8 (2p0)	3p6 9 and BP8 (2p0)	3p6 TP10, 9 and BP8 (2p0)	3p6 TP10, 9 and BP8 (2p0)	3p6 TP10, 9, and BP8 (2p0)
Boom To and REMOVE (CG)	3p0 7, 6, and BP5 (Bp0)	3p0 TP8, 7, and BP6 (1p0)	3p0 TP8, 7, and BP6 (1p0)	3p0 TP8, 7 and BP6 (1p0)	3p0 TP8, 7 and BP6 (1p0)	3p0 TP8, 7, and BP6 (1p0)
Boom To and REMOVE (CG)	1p7 TP5, BP4 and 4N1 (1p3)	1p7 TP6, 5, BP4, and 5N1 (1p3)	1p7 TP6, 5, BP4, and 5N1 (1p3)	1p7 TP6, 5, BP4, and 5N1 (1p3)	1p7 TP6, 5, BP4, and 5N1 1p3)	1p7 TP7, 5, BP4, and 5N1 (1p3)
Boom To and Remove	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'
Boom To and Remove	1p4 TP4, 3, and BP2	1p4 TP4, 3, and BP2	1p4 TP4, 3, and BP2	1p4 TP4, 3, and BP2	1p4 TP4, 3, and BP2	1p4 TP4, 3, and BP2
Remove	RRB, TP2, and 1	RRB, TP2, and 1	RRB, TP2, and 1	RRB, TP2, and 1	RRB, TP2, and 1	RRB, TP2, and 1
Complete By:	Note f	Note f	Note f	Note f	Note f	Note f

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

For all double story bridges - 2E + 1 through 2E + 12 bay, proceed to paragraph 2-26.

Perform Steps 1.a.(1) through 2.a.(9) then proceed to procedures below.

NOTE

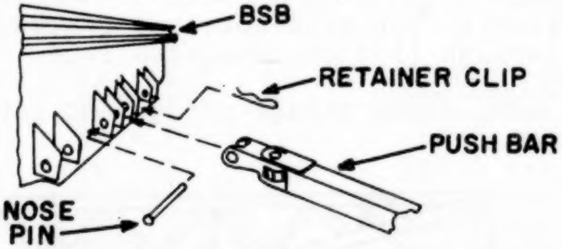
If bridge had been emplaced with minimum bearing under the original far bank end of bridge it will have to be "skidded". "Skidding" a bridge is a procedure used to get enough bridge [4.5 ft. (1.4m)] over the bank so the front roller beam can be put under it safely.

⑩ To "skid" the bridge.

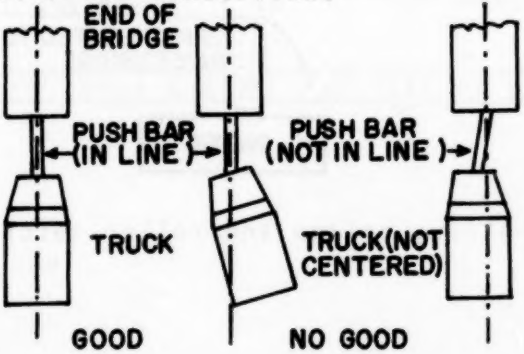
NOTE

If the end of bridge has sunk into the ground, it will be necessary to jack up the end of bridge so packing can be placed under the ETP.

(a) Pin short push bar to center bracket of bankseat beam with nose pin. Secure nose pin with retainer clip.

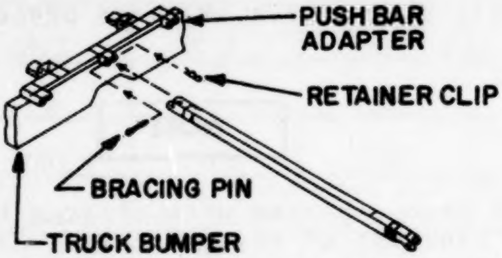


(b) Move vehicle into position near rear of bridge. Ensure that vehicle is in a straight line with the bridge and centered over the centerline.



2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

(c) Pin push bar to adapter with bracing pin and secure pin with retainer clip.



(d) Back vehicle up, "skidding" bridge over ground (or packing) until 4.5 ft (1.4m) of the end of bridge is over the bank. Stop "skidding".

(e) Remove push bar and back vehicle off the site.

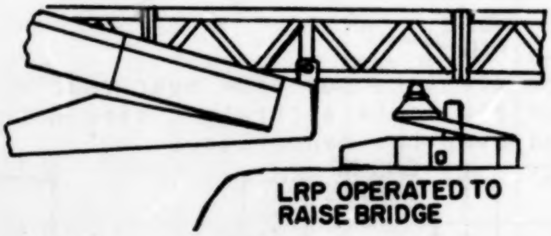
⑪ To raise bridge and position FRB under the bankseat beam PROCEED TO paragraph 2-26 and perform Steps 2.a.(10) through (12).

⑫ Assemble and position RRB. Perform Step 2.a.(13) of paragraph 2-26.

⑬ Position and connect vehicle to bridge using procedures in Steps 2.a.(14) and (15) of paragraph 2-26.

⑭ To assemble launching nose use procedures in Steps 2.a. (16) through (19) of paragrpah 2-26.

⑮ Using LRP, raise bridge off ground until jack is fully extended.



NOTE

Vehicle is holding bridge and roller catches in FRB are locked.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

(16) De-launch bridge and position RRB under the rear of the bridge using Steps 2.a.(21) and (22) of paragraph 2-26.

(17) Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point	Bridge	Panel Point
2E + 1	1p0	2E + 7	3p6
2E + 2	1p2	2E + 8	3p7
2E + 3	1p6	2E + 9	4p3
2E + 4	2p3	2E + 10	5p0
2E + 5	2p5	2E + 11	5p2
2E + 6	3p1	2E + 12	5p6

NOTE

The center of gravity of the bridge is over the FRB. It is at this point that any minor adjustments in the RRB placement must be made. Ensure that the bridge will come to rest on the roller beams correctly. The bridge should rest between the flanges of the rollers, not on top of them.

(18) Recover LRP using procedures in Step 2.a.(24) of paragraph 2-26.

(19) Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 1	1p3 (over RRB)
2E + 2	1p6 (over RRB)
2E + 3	2p4 (over RRB)
2E + 4 and 2E + 5	3p0 (over RRB)
2E + 6	4p0 (over RRB)
2E + 7	4p4 (over RRB)
2E + 8 and 2E + 9	4p6 (over RRB)
2E + 10	5p7 (over RRB)
2E + 11 and 2E + 12	6p1 (over RRB)

For all bridges, Perform Steps 2.a (26) and (27) of paragraph 2-26.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

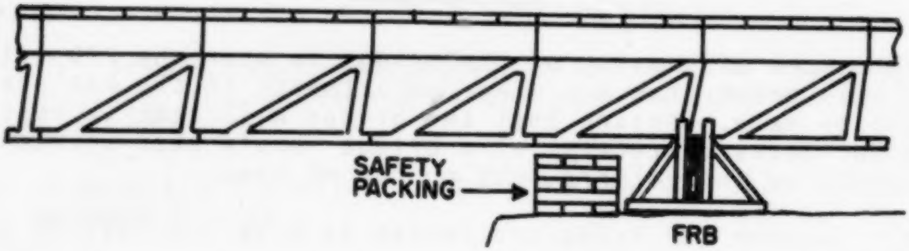
NOTE

Safety packing under the bridge in front of the FRB is used as a safety stop to prevent loss of the bridge during the removal of bridge bays. Safety packing will be put in after the de-launch is made and will remain in place until the last boom is made.

⑳ Place safety packing in front of FRB.

(a) Stack packing between FRB and the edge of gap.

(b) Keep height of packing within 3 in (7.5 cm) of bottom of bridge girder.

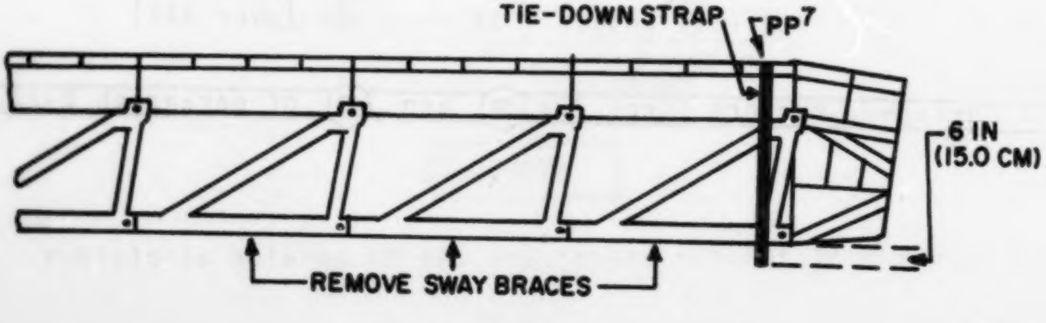


For all bridges, Perform Steps 2.a.(28) through (31) of paragraph 2-26.

㉑ Removing junction panel.

(a) Remove sway braces in the last three bays of bridge.

(b) Place one 10,000 lb cargo tie-down strap around panel point 7 of the last bay. This strap must be adjusted so as to provide 6 in (15.0 cm) of slack below bottom panel.

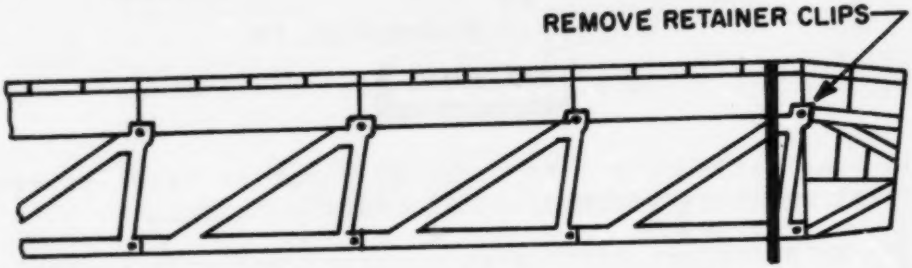


2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

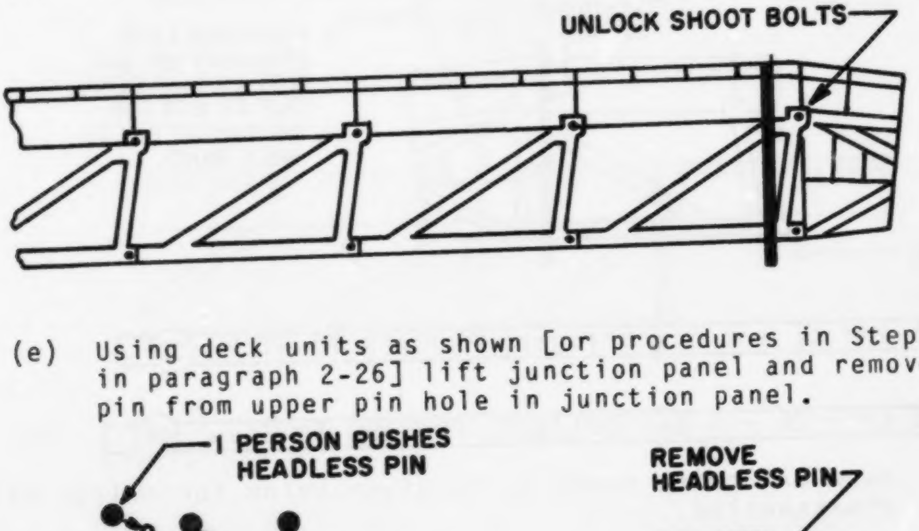
NOTE

Placement of this tie-down strap prevents the bottom panel from dropping too far. This strap reduces the chances of injurying personnel and damaging the panel.

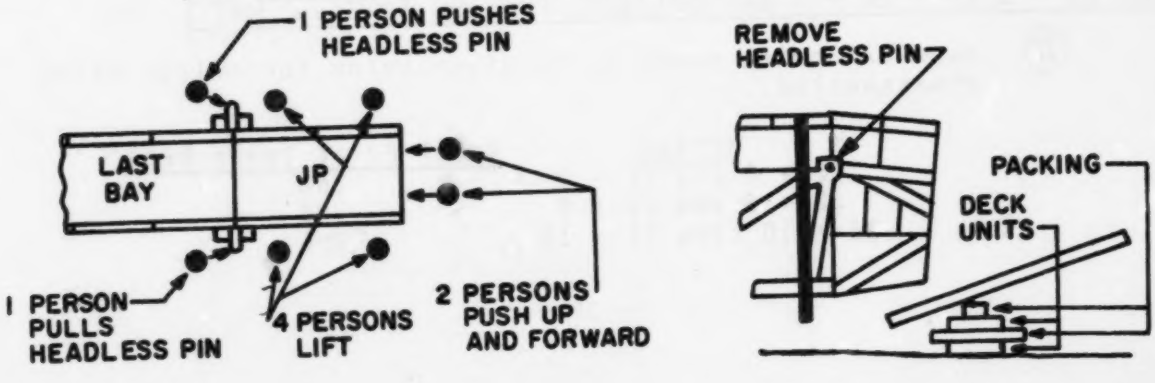
(c) Remove retainer clips from headless pin in junction panel.



(d) Unlock shoot bolts of bottom panel in last bay of bridge.

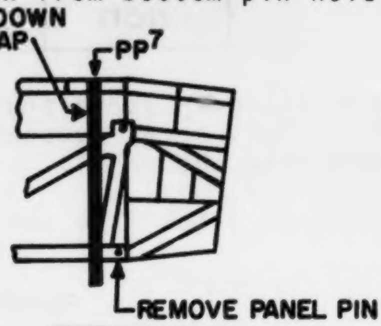


(e) Using deck units as shown [or procedures in Step 2.a.(32) in paragraph 2-26] lift junction panel and remove headless pin from upper pin hole in junction panel.


I PERSON PUSHES HEADLESS PIN
LAST BAY
JP
I PERSON PULLS HEADLESS PIN
4 PERSONS LIFT
2 PERSONS PUSH UP AND FORWARD
REMOVE HEADLESS PIN
PACKING
DECK UNITS

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

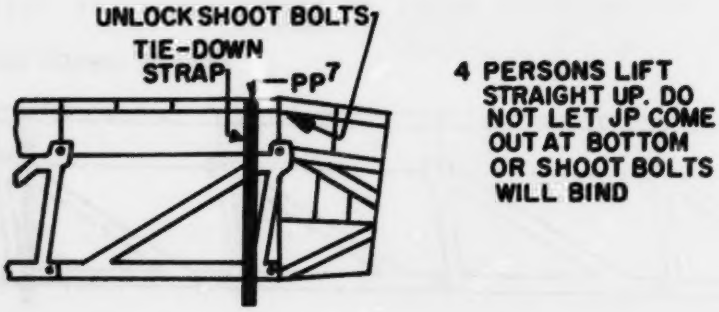
(f) Remove panel pin from bottom pin hole in junction panel.



WARNING

Bottom panel will drop into strap as junction panel is removed. Keep feet and legs clear of bottom panel.

(g) Four personnel lift junction panel and unlock shoot bolts. Remove junction panel from the end of bridge.


UNLOCK SHOOT BOLTS
TIE-DOWN STRAP
PP7
4 PERSONS LIFT STRAIGHT UP. DO NOT LET JP COME OUT AT BOTTOM OR SHOOT BOLTS WILL BIND

For 2E + 1 and 2E + 2 bay bridges, PROCEED TO STEP ㊴.

For 2E + 3 thru 2E + 5 bay bridges, PROCEED TO Step ㊳.

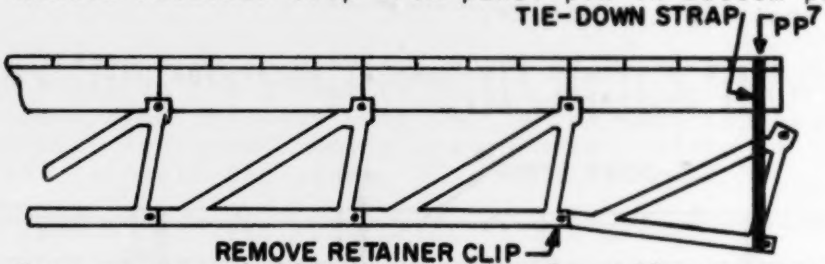
㉒ Boom bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over RRB)
2E + 6 and 2E + 7	3p0
2E + 8 and 2E + 9	3p6
2E + 10 thru 2E + 12	4p6

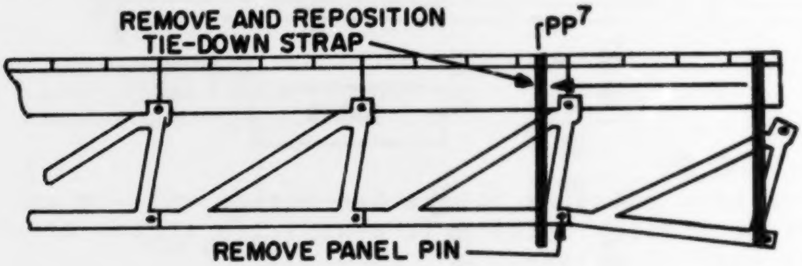
2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

㉓ To remove bottom panel in the last bay of bridge.

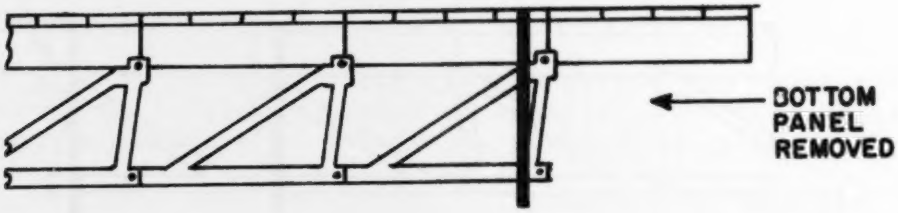
(a) Remove retainer clip from panel pin in bottom panel.



(b) Four personnel lift bottom panel, while one person unhooks and removes the tie-down strap, and another person removes the panel pin.



(c) Move bottom panel from under top panel.



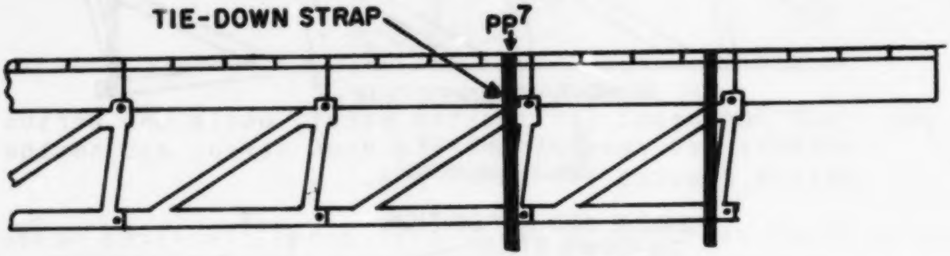
(d) Tie-down strap is hooked around panel point 7 of the next unstrapped bay.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

For 2E + 8 and 2E + 10 bay bridges, PROCEED TO STEP ㉘.

㉔ Removing top panels.

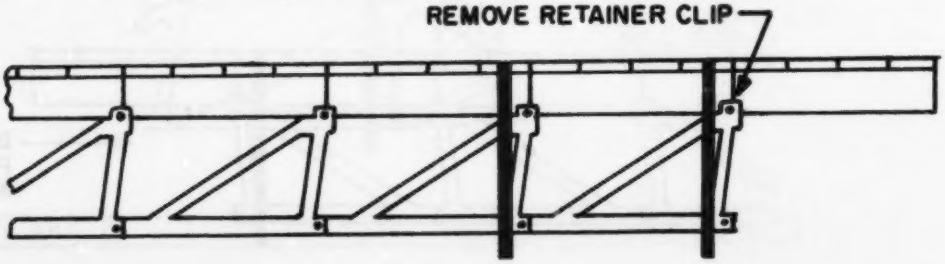
(a) Place a second tie-down strap around panel point 7 of the next unstrapped bay.



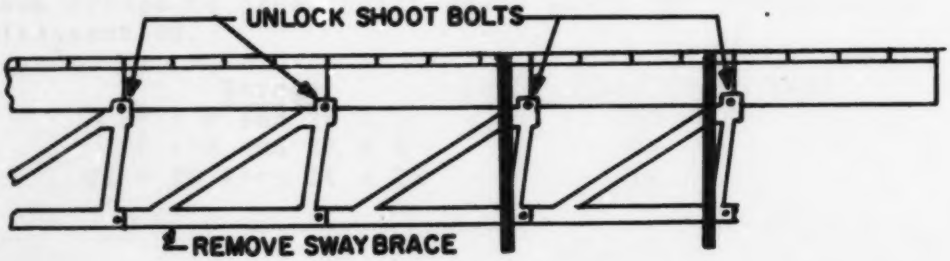
NOTE

From this point on, these two straps will be moved along the bridge girder so there is always two straps around the last two bays of bridge.

(b) Remove retainer clip from panel pin in last top panel.



(c) Unlock shoot bolts of the four bottom panels in each side of bridge.



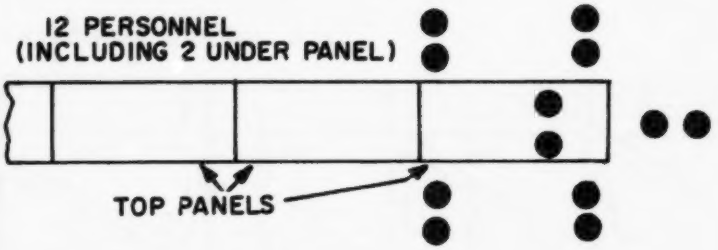
2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

NOTE

It is necessary to unlock four shoot bolts so as to provide enough slack in the girder to permit releasing the bottom panel upper jaws from the panel pin in the rearmost top panel. Ensure that four shoot bolts are unlocked before trying to lift the rearmost top panel.

(d) Remove the next sway brace in the bridge.

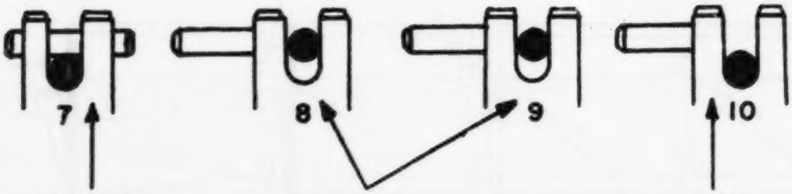
(e) Using 12 personnel (as shown), lift rearmost top panel until bottom panel falls free of panel pin in top panel.



NOTE

The panel pins in the upper jaws may not settle back down after the top panel is lifted (as shown in example). If this happens, it will not be possible to unlock the next shoot bolt.

To unlock the next shoot bolt (Bay 7), temporarily lock the shoot bolt in bottom panel 10 and lift top panel 11 until the pins in 9 and 8 resettle. Unlock shoot bolt in bays 10 and 7.



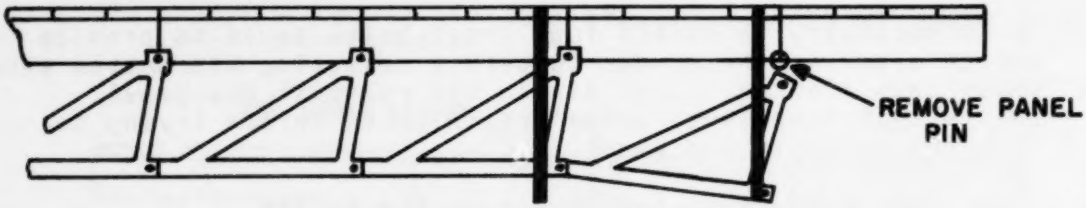
This shoot bolt will not unlock.

Did not settle back down in upper jaws.

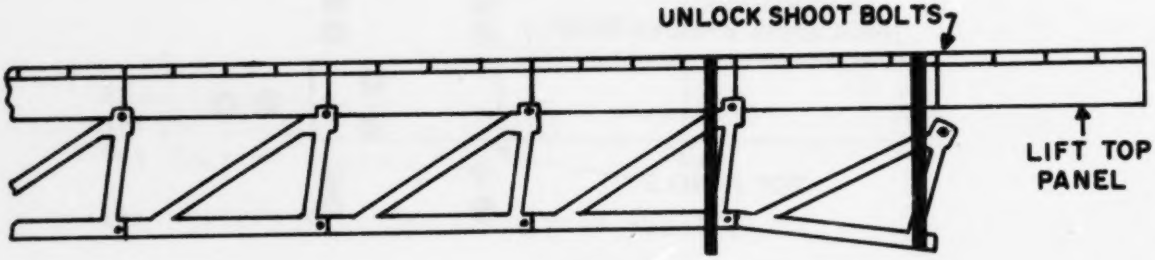
Temporarily lock this bolt and lift top panel 11 to get pins resettled.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

(f) Let top panel down and remove panel pin.

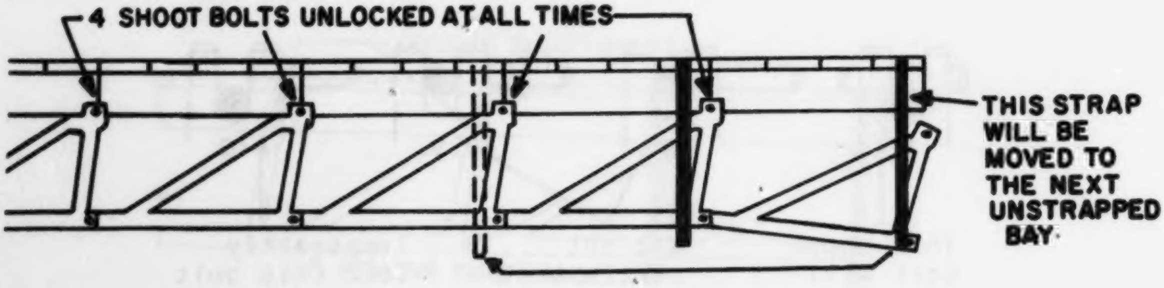


(g) Lift top panel, unlock shoot bolts in top panel and remove panel.



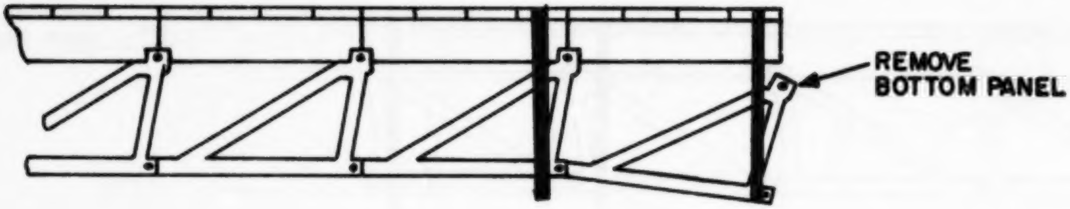
NOTE

As this top panel is removed ensure that four bottom panel shoot bolts are unlocked. As the next bottom panel is removed, unhook and move the tie-down strap to the next unstrapped bay.


4 SHOOT BOLTS UNLOCKED AT ALL TIMES
THIS STRAP WILL BE MOVED TO THE NEXT UNSTRAPPED BAY

㉕ Remove bottom panel of the next bay.

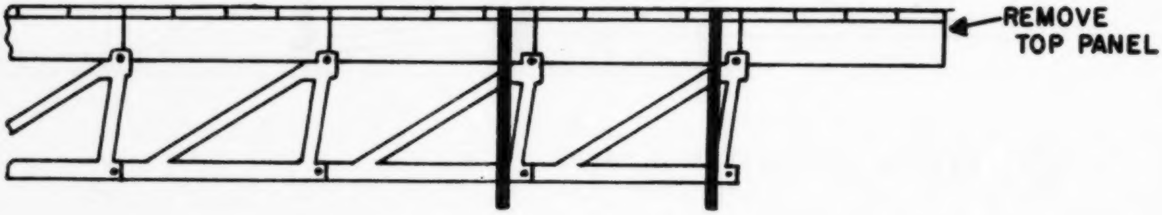
2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).



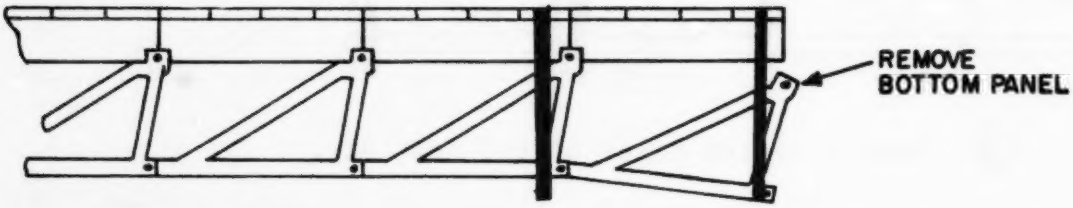
For 2E + 6 bay bridge, PROCEED TO STEP (38).

For 2E + 9 thru 2E + 12 bay bridges, PROCEED TO STEP (28).

(26) Remove rearmost top panel.



(27) Remove bottom panel of the next bay.



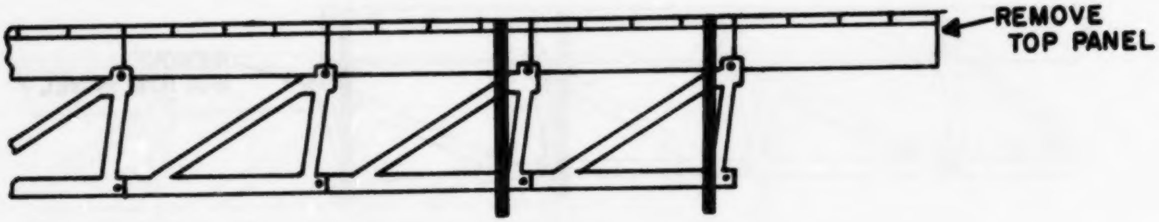
For 2E + 7 bay bridge, PROCEED TO STEP (38).

(28) Boom bridge to panel point given below for bridge being disassembled.

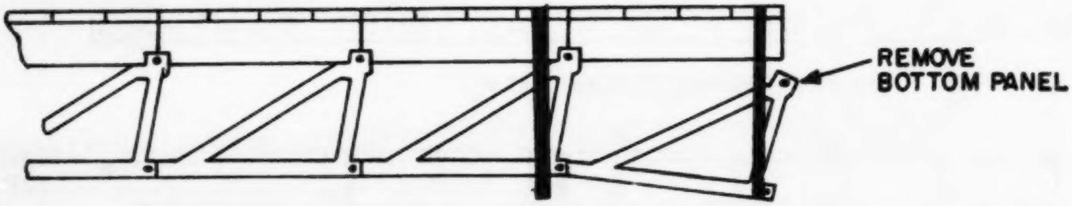
Bridge	Panel Point (over RRB)
2E + 8 and 2E + 9	3p0
2E + 10 thru 2E + 12	3p6

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

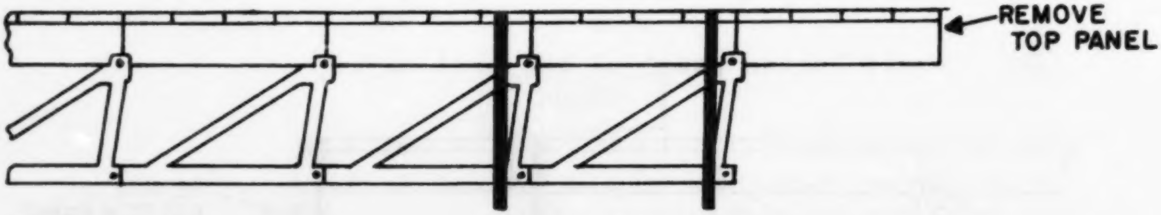
㉙ Remove rearmost top panel.



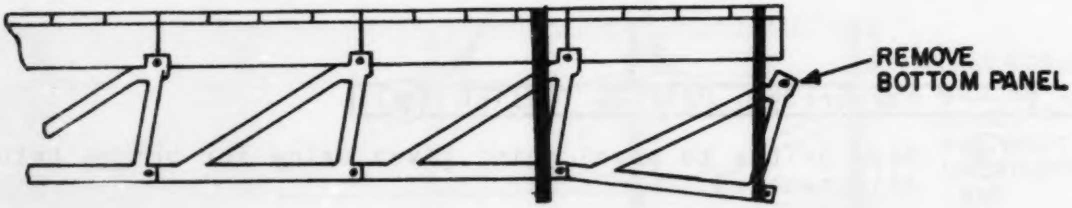
㉚ Remove bottom panel of the next bay.



㉛ Remove rearmost top panel.



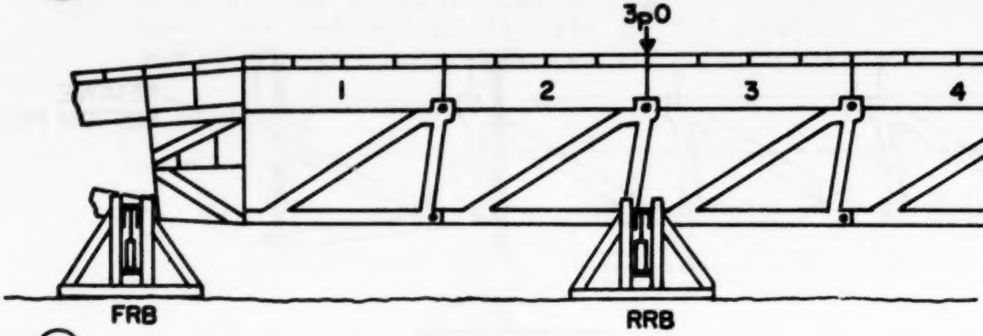
㉜ Remove bottom panel of the next bay.



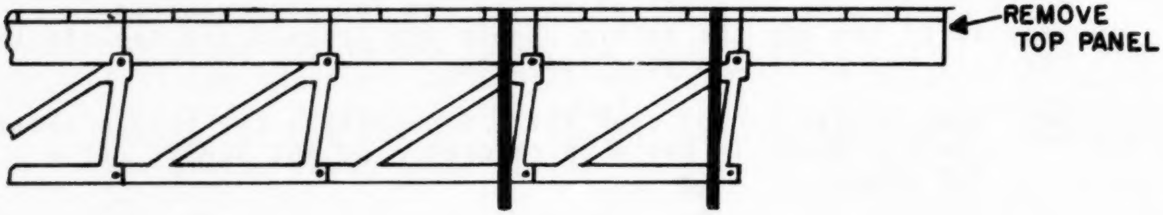
For 2E + 8 and 2E + 9 bay bridges, PROCEED TO STEP ㊳.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

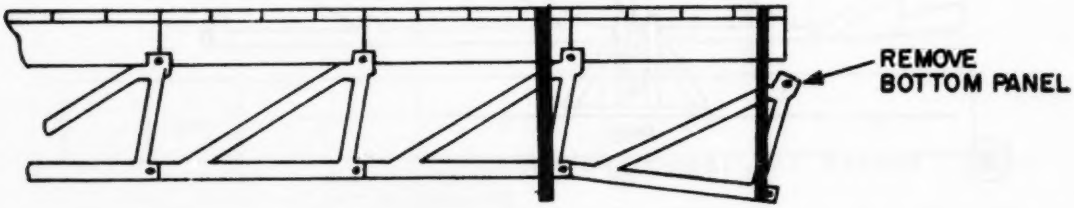
(33) Boom bridge to panel point 3p0.



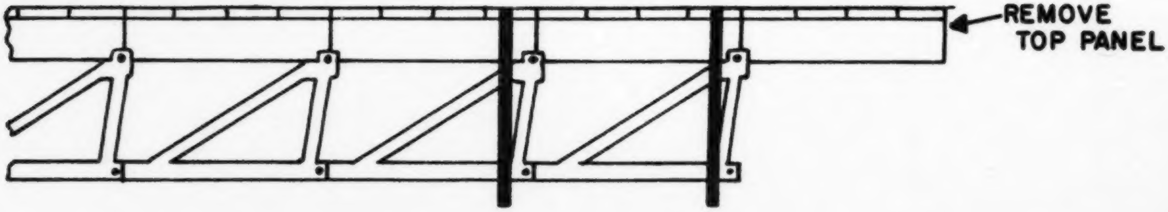
(34) Remove rearmost top panel.



(35) Remove bottom panel of the next bay.

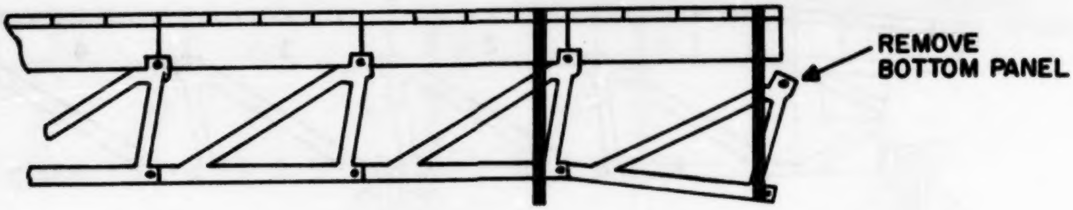


(36) Remove rearmost top panel.



2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

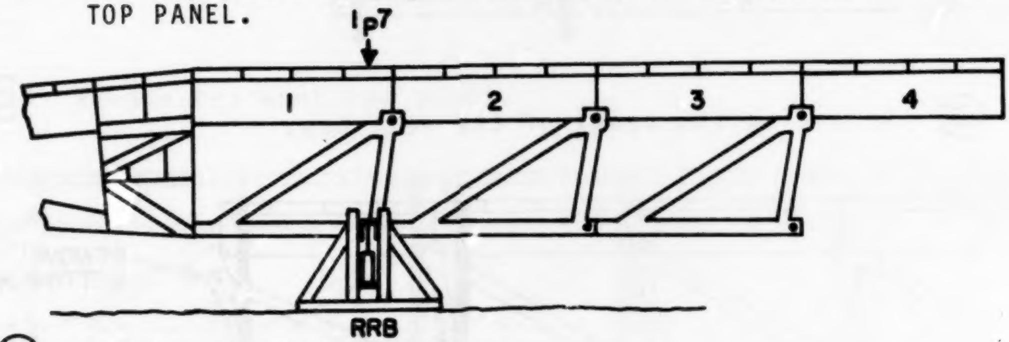
㊲ Remove bottom panel of the next bay.



NOTE

Additional booms to panel point 1p7 and 2p0 are required because of the way the bottom panels are removed and the pin in the last top panel and junction panel.

㊳ Boom bridge to 1p7 over RRB. Disassemble the bridge until the top panel in bay 4 is reached. DO NOT REMOVE BAY 4 TOP PANEL.



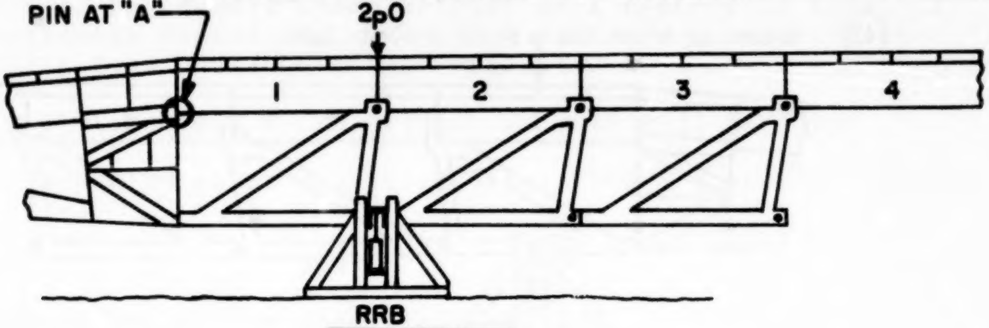
㊴ Remove the launching nose.

For 2E + 1 bay bridge, PROCEED TO STEP ㊹.

For 2E + thru 2E + 3 bay bridges, PROCEED TO STEP ㊶.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

(40) Boom bridge to panel point 2p0. This boom is needed to make the removal of the pin at "A" easier.

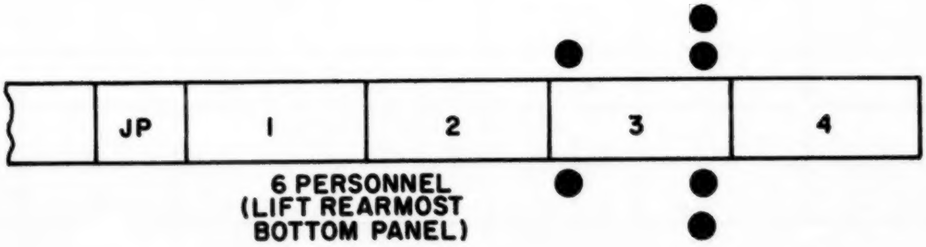


NOTE

The panel pin in the upper pin jaws of the junction panel and last top panel is called the pin at "A". This panel pin must be removed before the top panel of Bay 4 can be removed. The removal of the pin at "A" serves the same purpose as unlocking the bottom panel shoot bolt.

(41) To remove the pin at "A".

(a) Position six personnel around the rearmost bottom panel. (Bay 2 for 2E + 3 bay bridge).

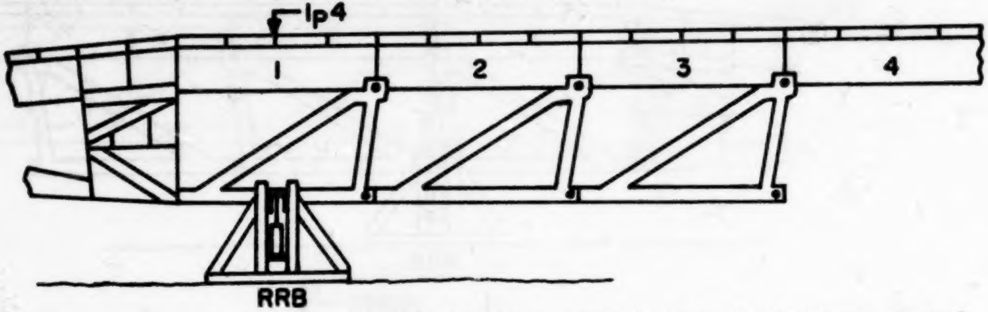


(b) Remove the pin at "A" as the six personnel lift the bottom panel.

2-27. DISASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Normal Site - Original Far Bank) (Cont).

For 2E + 2 bay bridge, PROCEED TO STEP (43).

(42) Boom bridge to panel point 1p4.



(43) Remove remaining bays of bridge until Bay 2 bottom panel is removed.

(44) Remove and disassemble RRB.

(45) Remove remaining bays, disassemble the end of bridge and FRB and clear the site of all components.

2-28. ASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Restricted Site).

This section describes the procedures for construction of 2E + 1 through 2E + 12 bay double story bridges on a restricted site. A site is considered restricted when the R distance (construction space) is less than distance given in Table 2-3.

This R distance can be reduced by as much as 3 bays by:

Using launching noses 1 or 2 sections longer than the standard launching nose.

and

by booming the bridge more frequently.

The table below gives the minimum R distance possible when using launching nose longer than standard noses.

Bridge Length	Nose Construction					
2E + No. of Bays	3N1	4N1	5N1	6N1	7N1	8N1
1	30 ft 9.1 m					
2		30 ft 9.1 m				
3		30 ft 9.1 m				
4		30 ft 9.1 m	22 ft 6.7 m			
5			30 ft 9.1 m	24 ft 7.3 m		
6			36 ft 11.0 m	30 ft 9.1 m		
7			42 ft 12.8 m	36 ft 11.0 m		
8				42 ft 12.8 m	36 ft 11.0 m	
9				48 ft 14.6 m	42 ft 12.8 m	
10				54 ft 16.5 m	42 ft 12.8 m	
11					54 ft 16.5 m	42 ft 12.8 m
12					54 ft 16.5 m	48 ft 14.6 m

R Distances above do not include length of push bar or launching vehicle.

2-28. ASSEMBLY - DOUBLE STORY - 2 E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

Since the procedures are very similar, only the steps that are different will be detailed. By using steps in Section 2-25 and the steps in this section the user can construct any of the bridges (2E + 1 through 2E + 12).

Once the user becomes familiar with the step by step procedures of construction, it will be possible to construct any link reinforced bridge by using the Building and Booming Table 2-38.

This table provides the necessary instructions to construct, boom and launch all bridges.

DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

TABLE 2-37. Required Steps Per Bridge Length.

2E + 1 W/3N1	2E + 2 W/4N1	2E + 3 W/4N1	2E +4 W/4N1	 W/5N1
For all Double Story bridges - 2E + 1 through 2E + 12 bay,perform steps 1.a.(1) through 2.a.(23) of paragraph 2-25, then perform the steps in this paragraph as shown below for the bridge being disassembled.				
(26)and(27)	(24) (26)and(27)	(24) (26)and(27)	(24) (26)and(27)	(24) (26)and(27)
For all bridges, Perform steps 2.a.(28) through (36) of paragraph 2-25				
(74)thru(78) (80) (89)thru(95)	For bridges with a 4N1 or larger nose, perform steps 2.a.(37) and (38) of paragraph 2-25.			
	(74)thru(78) (80) (90)thru(95)	(74)thru(81) (90)thru(95)	(49)and(50) (55)and(56) (74)thru(78) (80) (90)thru(95)	For bridges with a 5N1 or larger nose perform steps 2.a.(39) and (40) of paragraph 2-25.
				(74)thru(83) (90)thru(95)
To complete bridge, Perform Steps 2.a.(78) through (92) of paragraph 2-25.				

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

TABLE 2-37. Required Steps Per Bridge Length (Cont).

2E + 5		2E + 6		2E + 7	
W/5N1	W/6N1	W/5N1	W/6N1	W/5N1	W/6N1
For all Double Story bridges - 2E + 1 through 2E + 12 bay, perform steps 1.a (1) through 2.a.(23) of paragraph 2-25, then perform the steps in this paragrpah as shown below for the bridge being disassembled.					
(24) (26)and(27)	(24) (26)and(27)	(24)thru(27)	(24) (26)and(27)	(24)thru(27)	(24)thru(27)
For all bridges, Perform steps 2.a.(28) through (36) of paragraph 2-25.					
For bridges with a 4N1 or larger nose, perform steps 2.a.(37) and (38) of paragraph 2-25					
For bridges with a 5N1 or larger nose perform steps 2.a.(39) and (40) of paragraph 2-25.					
(49)and(50) (55)and(56) (74)thru(81) (90)thru(95)	Steps 2.a (41)and(42) of para. 2-25 (74)thru(85) (90)thru(95)	(49) (51) (55) (57) (74)thru(81) (90)thru(95)	Steps 2.a (41)and(42) of para. 2-25 (74)thru(87) (90)thru(95)	(49) (51)and(52) (55) (58) (62) (64) (74)thru(78) (80) (90)thru(95)	Steps 2.a (41)and(42) of.para. 2-25 (49) (51) (74)thru(85) (90)thru(95)
To complete bridge, Perform Steps 2.a.(78) through (92) of paragraph 2-25.					

TABLE 2-37. Required Steps Per Bridge Length (Cont).

2E + 8		2E + 9		2E + 10	
W/6N1	W/7N1	W/6N1	W/7N1	W/6N1	W/7N1
For all Double Story bridges - 2E + 1 through 2E + 12 bay, Perform Steps 1.a (1) through 2.a.(23) of paragraph 2-25, then perform the steps in this paragraph as shown below for the bridge being disassembled.					
(24)thru(27)	(24)thru(27)	(24)thru(27)	(24)thru(27)	(24)thru(27)	(24)thru(27)
For all bridges perform Steps 2.a.(28) through (42) of paragraph 2-25					
(49) (51) (55) (57) (62)and (63) (74)thru(83) (90)thru(95)	(43)thru(45) (74)thru(87) (90)thru(95)	(49) (51)and(52) (55) (58) (62) (64) (68)thru(69) (74)thru(81) (90)thru(95)	(43)thru(45) (49) (52) (74)thru(87) (90)thru(95)	(49) (51)and(52) (55) (58)and(59) (62) (65) (68) (70) (72)thru(78) (80) (90)	(43)thru(45) (49) (52) (55) (58) (62) (64) (74)thru(85) (90)thru(95)
To complete bridge, Perform Steps 2.a.(78) through (92) of paragraph 2-25.					

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 Bay (Restricted Site) (Cont).

TABLE 2-37. Required Steps Per Bridge Length (Cont).

2E + 11		2E + 12	
W/7N1	W/8N1	W/7N1	W/8N1
For all Double Story bridges - 2E + 1 through 2E + 12 bay, Perform Steps 1.a.(1) through 2.a.(23) of paragraph 2-25, then perform the steps in this paragraph as shown below for the bridge being disassembled.			
(24)thru(27)	(24)thru(27)	(24)thru(27)	(24)thru(27)
For all bridges perform Steps 2.a.(28) through (42) of paragraph 2-25			
(43)thru(46) (49) (53)thru(55) (60) (62) (66) (74)thru(83) (90)thru(95)	(43)thru(45) (47)thru(49) (52) (55) (58) (74)thru(95)	(43)thru(46) (49) (53)thru(55) (60)thru(62) (67)and (68) (71) (74)thru(81) (90)thru(95)	(43)thru(45) (47)thru(49) (52) (55) (58) (62) (64) (68)and(69) (74)thru(87) (90)thru(95)
To complete bridge perform steps 2.a.(78) through (92) of paragraph 2-25.			

TABLE 2-38. BUILDING AND BOOM TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site)

Bridge ft Length m	37 11.3	43 13.1	49 14.9	55 16.8		61 18.6		67 20.4	
2E + No. of Bays	1	2	3	4		5		6	
Nose Construction	3N1	4N1	4N1	4N1	5N1	5N1	6N1	5N1	6N1
Build E + 1 and Position RRB at	1p3	1p6	1p4	1p4	1p4	1p4	1p4	1p4	1p4
Add CG	3N1 (Cp1)	2 and 4N1 (Bp7)	2 and 4N1 (Bp7)	2 and 4N1 (Bp7)	2 and 5N1 (Cp1)	2 and 5N1 (Cp1)	2 and 6N1 (Cp4)	2, 3, and 5N1 (Bp4)	2 and 6N1 (Bp4)
Boom To and Add (CG)				1p7 3 (Bp2)		1p5 3 (Bp4)		2p4 4 (Bp0)	
Boom To and Add (CG)				2p4 4 (Ap2)		2p4 4 (Bp0)		2p6 5 (1p0)	
Launch To and Position under LZ	Cp1 LRP 3	Bp7 LRP 8	Bp7 LRP 2	Ap2 LRP 3	Cp1 LRP 6	Bp0 LRP 2	Cp4 LRP 6	1p0 LRP 2	Cp4 LRP 1
Launch To and Remove	Bp1 RRB	Ap3 RRB	Ap3 RRB	1p6 RRB	Bp1 RRB	1p4 RRB	Bp4 RRB	2p0 RRB	Bp4 RRB
Launch To and Add	1p4 E	2p4 E	2p4 3	4p4 E	2p4 3	4p4 5	2p4 3	5p4 6	2p4 3
Remove	Note a	Note a	Note a	Note a	Note a	Note a	Note a	Note a	Note a
Launch To and Add			3p4 E		3p4 4	5p4 E	3p4 4	6p4 E	3p4 4
Launch To and Add					4p4 E		4p4 5		4p4 5
Launch To and Add							5p4 E		5p4 6
Launch To and Add									6p4 E
Complete By:	Note b	Note b	Note b	Note b	Note b	Note b	Note b	Note b	Note b

TABLE 2-38. BUILDING AND BOOM TABLE - 2E + 1 thru 2 E + 12 Bay Double Story (Restricted Site) (Cont).

Bridge ft. Length m	73 22.3		79 24.1		85 25.9		91 27.7		97 29.6		103 31.4	
2E + 7 of Bays	7		8		9		10		11		12	
Nose Construction	5N1	6N1	6N1	7N1	6N1	7N1	6N1	7N1	7N1	8N1	7N1	8N1
Build E + 1 and Position RRB at	1p4	1p4	1p4	1p4	1p4	1p4	1p4	1p4	1p4	1p4	1p4	1p4
Add (CG)	2, 3, and 5N1 (Bp4)	2, 3, and 6N1 (Bp7)	2, 3, and 6N1 (Bp7)	2, 3, and 7N1 (Cp2)	2, 3, and 6N1 (Bp7)	2, 3, and 7N1 (Cp2)	2, 3, and 6N1 (Bp7)	2, 3, and 7N1 (Cp2)	2, 3, and 7N1 (Cp2)	2, 3, and 7N1 (Cp2)	2, 3, and 7N1 (Cp2)	2, 3, and 7N1 (Cp2)
Add (CG)				4 (Bp5)		4 (Bp5)		4 (Bp5)	4 and 5 (Bp0)	4 and 8N1 (Cp0)	4, 5, and 8N1 (Cp2)	4 and 8N1 (Cp0)
Boom To and Add (CG)	2p2 4 and 5 (1p0)	1p7 4 (Bp2)	1p7 4 (Bp2)		1p7 4 and 5 (Ap2)	2p1 5 (Bp0)	1p7 4 and 5 (Ap2)	2p1 5 (Bp0)	2p6 6 and 7 (1p4)	1p6 5 (Bp3)	2p6 6 and 7 (1p4)	1p6 5 (Bp3)
Boom To and Add (CG)	3p2 6 (1p4)		2p4 5 (Ap2)		3p0 6 (1p2)		3p0 6 and 7 (1p6)	2p6 6 (1p0)	3p6 8 (2p1)	2p3 6 (Ap2)	3p6 8 and 9 (2p5)	2p3 6 (Ap2)
Boom To and Add (CG)	3p7 7 (2p0)		3p0 6 (1p2)		3p4 7 (1p6)		4p0 8 (2p3)	3p2 7 (1p4)	4p2 9 (2p5)		4p7 10 (3p1)	3p0 7 (1p2)
Boom To and Add (CG)					4p9 8 (2p3)		4p4 9 (2p7)				5p3 11 (3p5)	3p4 8 (1p6)
Boom To and Add (CG)							5p1 10 (3p3)					

TABLE 2-38. BUILDING AND BOOM TABLE - 2E + 1 thru 2 E + 12 Bay Double Story (Restricted Site) (Cont).

Bridge ft. Length m	73 22.3		79 24.1		85 25.9		91 27.7		97 29.6		103 31.4	
2E + No. of Bays	7		8		9		10		11		12	
Nose Construction	5N1	6N1	6N1	7N1	6N1	7N1	6N1	7N1	7N1	8N1	7N1	8N1
Launch To and Position under LZ	2p0 LRP 2	Bp2 LRP 2	1p2 LRP 2	Bp5 LRP 4	2p3 LRP 3	Bp0 LRP 1	3p3 LRP 3	1p4 LRP 1	2p5 LRP 2	Ap2 LRP 1	3p5 LRP 2	1p6 LRP 1
Launch To and Remove	3p0 RRB	1p2 RRB	2p2 RRB	Ap1 RRB	3p3 RRB	1p4 RRB	4p3 RRB	2p4 RRB	3p5 RRB	1p6 RRB	4p5 RRB	2p6 RRB
Launch To and Add	7p4 E	4p4 5	6p4 7	4p4 5	8p4 9	5p4 6	10p4 E	7p4 8	9p4 10	6p4 7	11p4 12	8p4 9
Remove	Note a	Note a	Note a	Note a	Note a	Note a	Note a	Note a	Note a	Note a	Note a	Note a
Launch To and Add		5p4 6	7p4 8	5p4 6	9p4 E	6p4 7		8p4 9	10p4 11	7p4 8	12p4 E	9p4 10
Launch To and Add		6p4 7	8p4 E	6p4 7		7p4 8		9p4 10	11p4 E	8p4 9		10p4 11
Launch To and Add		7p4 E		7p4 8		8p4 9		10p4 E		9p4 10		11p4 12
Launch To and Add				8p4 E		9p4 E				10p4 11		12p4 E
Launch To and Add										11p4 E		
Complete by:	Note b	Note b	Note b	Note b	Note b	Note b	Note b	Note b	Note b	Note b	Note b	Note b

Notes: a. Nose sections removed as they pass the LRP. Leave the last 3 nose sections in place until far bank end of bridge has been lowered to ground.

b. Launch until far bank end of bridge is within 9 in (23 cm) of LRP or RBSB overhangs FRB by 1.5 ft (0.5 m). Put bridge on ground.

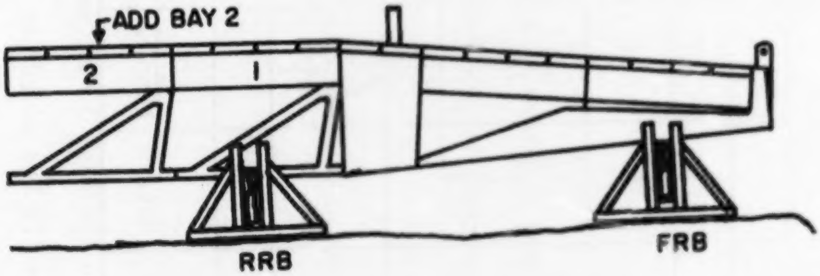
2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

For all Double Story bridges + 2E + 1 thru 2E + 12 bay, PROCEED to paragraph 2-25. Perform steps 1.a.(1) thru 2.a.(23) then proceed to procedures below.

For 2E + 1 bay bridge, PROCEED TO STEP ㉖.

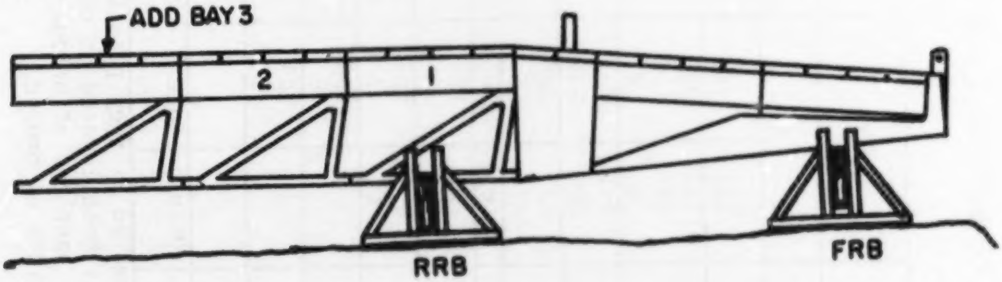
For all other bridges, PROCEED TO STEP ㉔.

㉔ Pin bay 2 to end of bay 1.

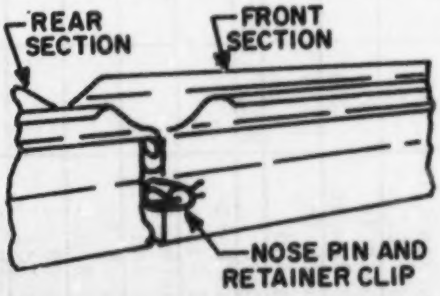


For 2E + 2, 2E + 3, 2E + 4 (w/4N1&5N1), 2E + 5 (w/5N1&6N1), and 2E + 6 (w/6N1), PROCEED TO STEP ㉖.

㉕ Pin bay 3 to end of bay 2.

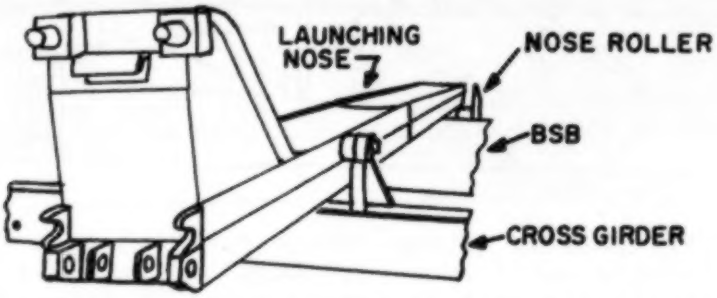


㉖ Pin front and rear nose sections of light nose together.



2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

㉗ Place front end of light nose section on nose roller and rear of nose section on nose cross girder. Rear of nose section should extend about 2 ft (0.61 m) behind cross girder.



For all bridges, perform steps 2.a.(28) thru (36) of paragraph 2-25, then return to this page and perform the steps that follow.

For 2E + 1 bay bridge, PROCEED TO STEP (74).

For bridges with a 4N1 or larger nose, perform steps 2.a.(37) and (38) of paragraph 2-25.

For 2E + 2 and 2E + 3 bay bridges, PROCEED TO STEP (74).

For 2E + 4 (w/4N1), PROCEED TO STEP ㊾.

For bridges with a 5N1 or larger nose, perform steps 2.a.(39) and (40) of paragraph 2-25.

For 2E + 4 (w/5N1), PROCEED TO STEP (74).

For 2E + 5 (w/5N1), 2E + 6 (w/5N1) and 2E + 7 (w/5N1), PROCEED TO STEP ㊾

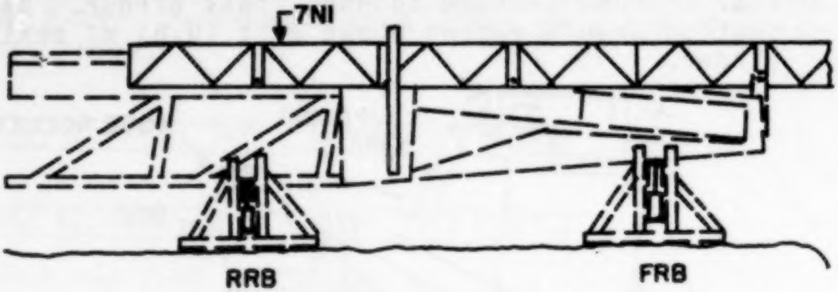
For bridges with a 6N1 or larger nose, perform steps 2.a.(41) and (42) of paragraph 2-25.

For 2E + 5 (w/6N1) and 2E + 6 (w/6N1), PROCEED TO STEP (74).

For 2E + 7 (w/6N1), 2E + 8 (w/6N1), 2E + 9 (w/6N1) and 2E + 10 (w/6N1), PROCEED TO STEP ㊾

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

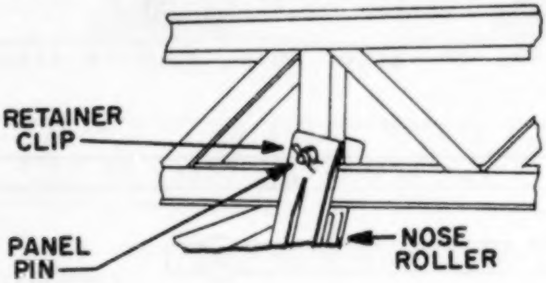
(43) Pin seventh heavy nose section to sixth heavy nose section.



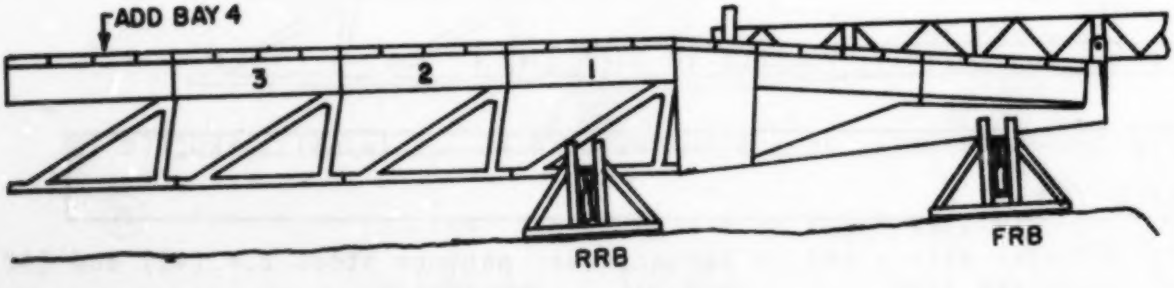
(44) Lift gravity catch, remove carrying bar, and push nose forward until anchorage tube in sixth heavy nose section is aligned with anchorage holes in nose roller.

(a) Insert panel pin through anchorage holes and tube.

(b) Put retainer clip through the end of panel pin.



(45) Pin bay 4 to end of bay 3.



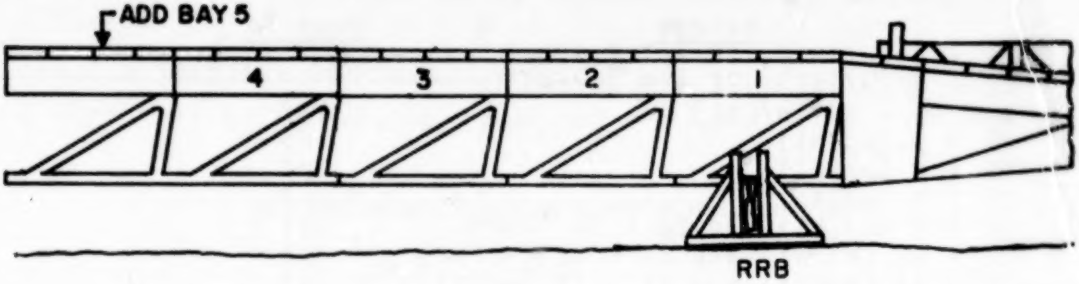
For 2E + 8 (w/7N1), PROCEED TO STEP (74).

For 2E + 9 (w/7N1) and 2E + 10 (w/7N1), PROCEED TO STEP (49).

For 2E + 11 (w/8N1) and 2E + 12 (w/8N1), PROCEED TO STEP (47).

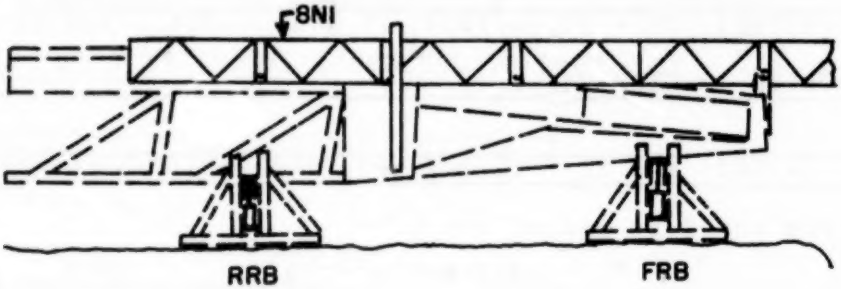
2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(46) For 2E + 11 and 2E + 12 only. Pin bay 5 to end of bay 4.



For 2E + 11 (w/7N1) and 2E + 12 (w/7N1), PROCEED TO STEP (49).

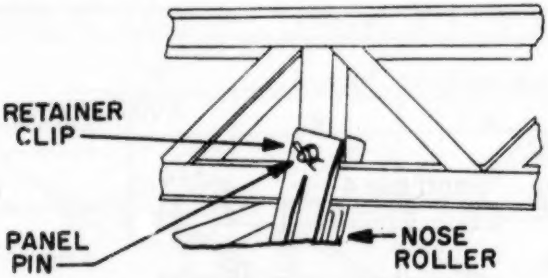
(47) Pin eighth heavy nose section to seventh heavy nose section.



(48) Lift gravity catch, remove carrying bar, and push nose forward until anchorage tube in seventh heavy nose section is aligned with anchorage holes in nose roller.

(a) Insert panel pin through anchorage holes and tube.

(b) Put retainer clip through the end of panel pin.



2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(49) Boom to panel point given below for bridge being constructed.

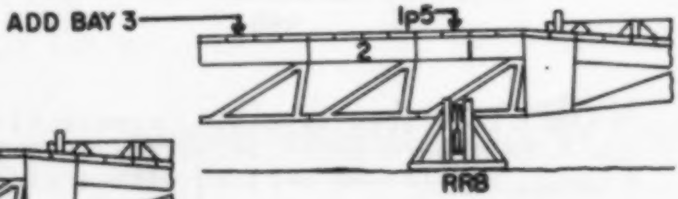
Bridge	Boom To
2E + 4 (w/4N1), 2E + 7 (w/6N1), 2E + 8 (w/6N1), 2E + 9 (w/6N1), and 2E + 10 (w/6N1)	1p7
2E + 5 (w/5N1)	1p5
2E + 6 (w/5N1)	2p4
2E + 7 (w/5N1)	2p2
2E + 9 (w/7N1) and 2E + 10 (w/7N1)	2p1
2E + 11 (w/7N1) and 2E + 12 (w/7N1)	2p6
2E + 11 (w/8N1) and 2E + 12 (w/8N1)	1p6

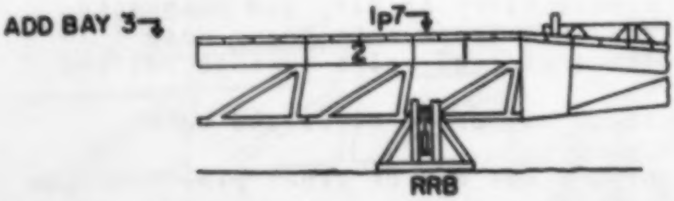
For 2E + 6 (w/5N1), 2E + 7 (w/5N1&6N1), 2E + 8 (w/6N1), 2E + 9 (w/6N1) and 2E + 10 (w/6N1), PROCEED TO STEP (51).

For 2E + 9 (w/7N1), 2E + 10 (w/7N1), 2E + 11 (w/8N1) and 2E + 12 (w/8N1), PROCEED TO STEP (52).

For 2E + 11 (w/7N1) and 2E + 12 (w/7N1), PROCEED TO STEP (53).

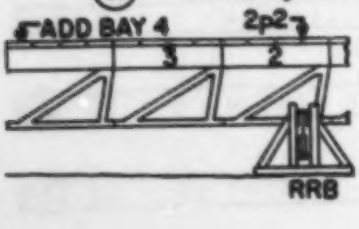
(50) Pin bay 3 to end of bay 2.

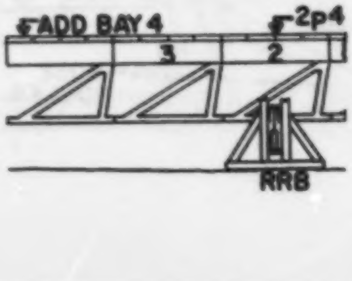


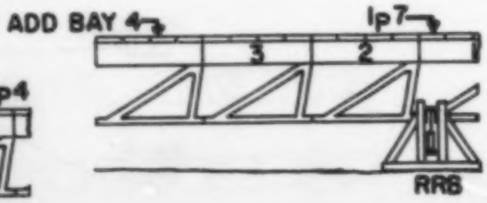


For 2E + 4 (w/4N1) and 2E + 5 (w/5N1), PROCEED TO STEP (55).

(51) Pin bay 4 to end of bay 3.





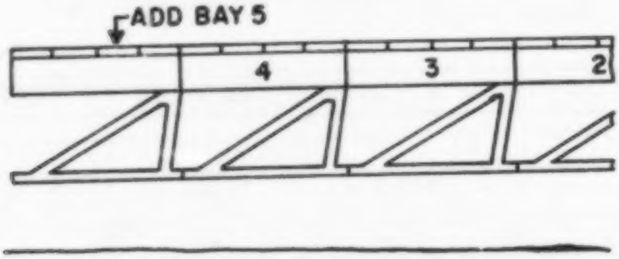


2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

For 2E + 6 (w/5N1) and 2E + 8 (w/6N1), PROCEED TO STEP (55).

For 2E + 7 (w/6N1), PROCEED TO STEP (74).

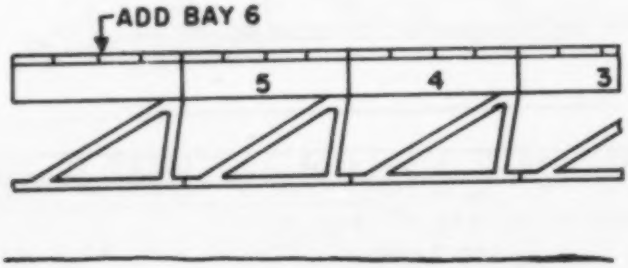
(52) Pin bay 5 to end of bay 4.



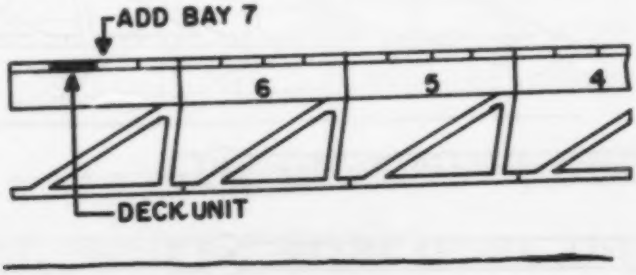
For 2E + 7 (w/5N1), 2E + 9 (w/6N1), 2E + 10 (w/6N1&7N1), 2E + 11 (w/8N1) and 2E + 12 (w/8N1), PROCEED TO STEP (55)

For 2E + 9 (w/7N1), PROCEED TO STEP (74).

(53) Pin bay 6 to end of bay 5.



(54) Pin bay 7 to end of bay 6. Place 1 deck unit in the third deck recess of bay 7.



2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(55) Boom bridge to panel point given below for bridge being constructed.

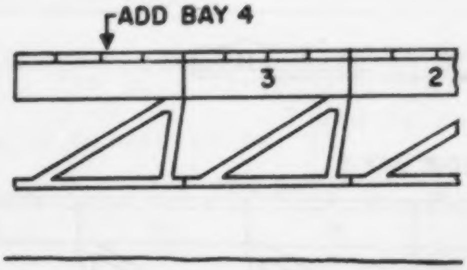
Bridge	Boom To	Bridge	Boom To
2E + 4 (w/4N1)	2p4	2E + 9 (w/6N1) and 2E + 10 (w/6N1)	3p0
2E + 5 (w/5N1)	2p2	2E + 10 (w/7N1)	2p6
2E + 6 (w/5N1)	2p6	2E + 11 (w/7N1) and 2E + 12 (w/7N1)	3p6
2E + 7 (w/5N1)	3p2	2E + 11 (w/8N1) and 2E + 12 (w/8N1)	2p3
2E + 8 (w/6N1)	2p4		

For 2E + 6 (w/5N1) and 2E + 8 (w/6N1), PROCEED TO STEP (57).

For 2E + 7 (w/5N1), 2E + 9 (w/6N1), 2E + 10 (w/6N1&7N1), 2E + 11 (w/8N1) and 2E + 12 (w/8N1), PROCEED TO STEP (58)

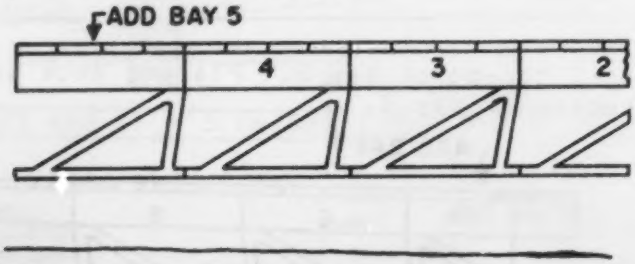
For 2E + 11 (w/7N1) and 2E + 12 (w/7N1), PROCEED TO STEP (60).

(56) Pin bay 4 to end of bay 3.



For 2E + 4 (w/4N1) and 2E + 5 (w/5N1), PROCEED TO STEP (74).

(57) Pin bay 5 to end of bay 4.

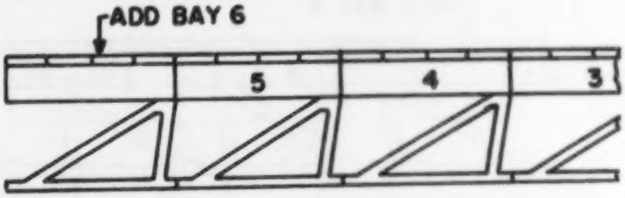


For 2E + 6 (w/5N1), PROCEED TO STEP (74).

For 2E + 8 (w/6N1), PROCEED TO STEP (62).

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

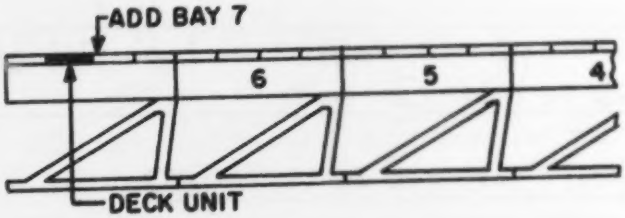
(58) Pin bay 6 to end of bay 5.



For 2E + 7 (w/5N1), 2E + 9 (w/6N1), 2E + 10 (w/7N1), and 2E + 12 (w/8N1), PROCEED TO STEP (62).

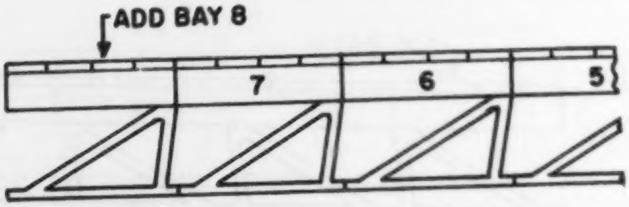
For 2E + 11 (w/8N1), PROCEED TO STEP (74).

(59) Pin bay 7 to end of bay 6. Place 1 deck unit in the third deck recess of bay 7.



For 2E + 10 (w/6N1), PROCEED TO STEP (62).

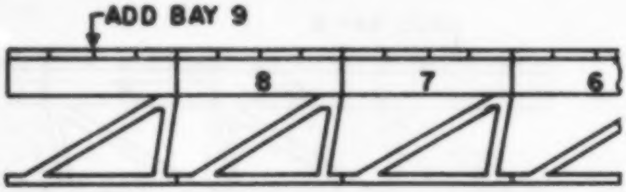
(60) Pin bay 8 to end of bay 7.



For 2E + 11 (w/7N1), PROCEED TO STEP (62).

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(61) Pin bay 9 to end of bay 8.



(62) Boom bridge to panel point given below for bridge being constructed. For all bridges [except 2E + 12 (w/7N1)]. For 2E + 12 bay (w/7N1), use procedures in Steps 2.a.(55) through (64) of paragraph 2-25.

Bridge	Boom To	Bridge	Boom To
2E + 7 (w/5N1)	3p7	2E + 10 (w/7N1)	3p2
2E + 8 (w/6N1)	3p0	2E + 11 (w/7N1)	4p2
2E + 9 (w/6N1)	3p4	2E + 12 (w/7N1)	4p7
2E + 10 (w/6N1)	4p0	2E + 12 (w/8N1)	3p0

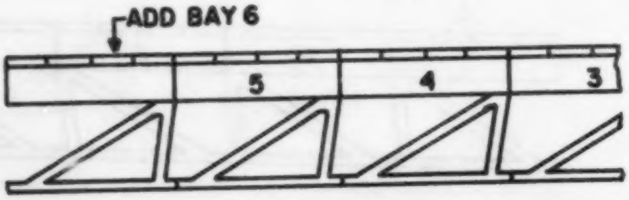
For 2E + 7 (w/5N1), 2E + 9 (w/6N1), 2E + 10 (w/7N1) and 2E + 12 (w/8N1), PROCEED TO STEP (64)

For 2E + 10 (w/6N1), PROCEED TO STEP (65).

For 2E + 11 (w/7N1), PROCEED TO STEP (66).

For 2E + 12 (w/7N1), PROCEED TO STEP (67).

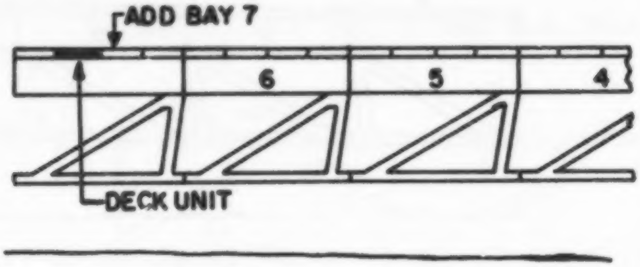
(63) Pin bay 6 to end of bay 5.



For 2E + 8 (w/6N1), PROCEED TO STEP (74).

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

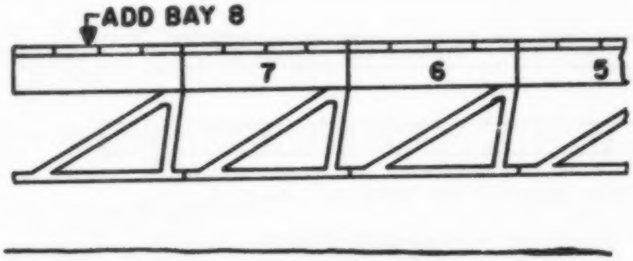
(64) Pin bay 7 to end of bay 6. Place 1 deck unit in the third deck recess of bay 7.



For 2E + 7 (w/5N1) and 2E + 10 (w/7N1), PROCEED TO STEP (74).

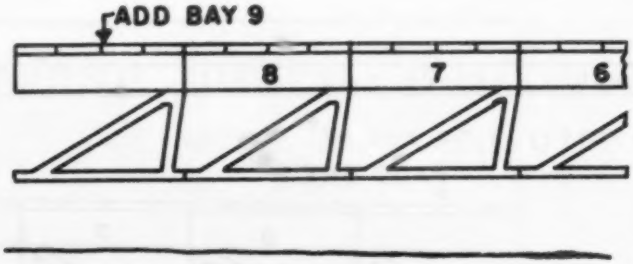
For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP (68).

(65) Pin bay 8 to end of bay 7.



For 2E + 10 (w/6N1), PROCEED TO STEP (68).

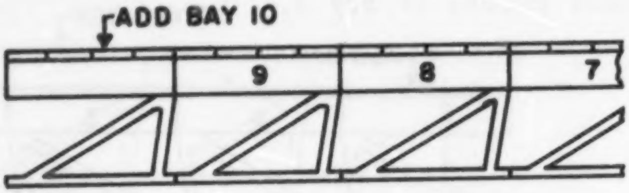
(66) Pin bay 9 to end of bay 8.



For 2E + 11 (w/7N1), PROCEED TO STEP (74).

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(67) Pin bay 10 to end of bay 9.



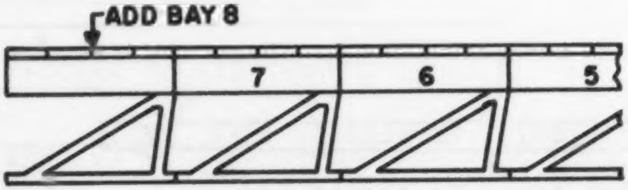
(68) Boom bridge to panel point given below for bridge being constructed. For all bridges [except 2E + 12 (w/7N1)]. For 2E + 12 (w/7N1), use procedures in Steps 2.a.(55) through (64) of paragraph 2-25.

Bridge	Boom To
2E + 9 (w/6N1)	4p0
2E + 10 (w/6N1)	4p4
2E + 12 (w/7N1)	5p3
2E + 12 (w/8N1)	3p4

For 2E + 10 (w/6N1), PROCEED TO STEP (70).

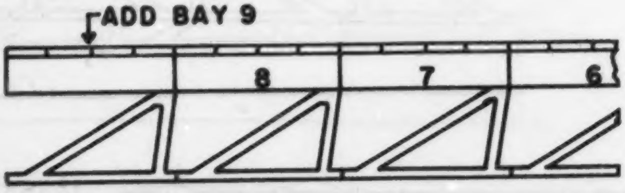
For 2E + 12 (w/7N1), PROCEED TO STEP (71).

(69) Pin bay 8 to end of bay 7.



For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP (74).

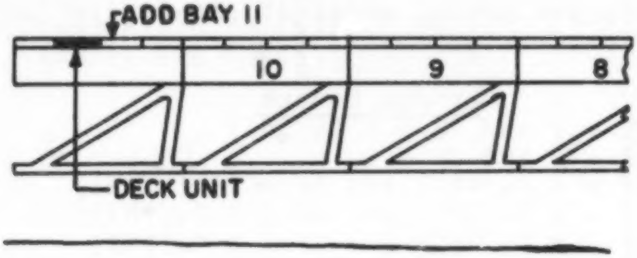
(70) Pin bay 9 to end of bay 8.



2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

For 2E + 10 (w/6N1), PROCEED TO STEP ⑫.

⑪ Pin bay 11 to end of bay 10. Place one deck unit in the third deck recess of bay 11...

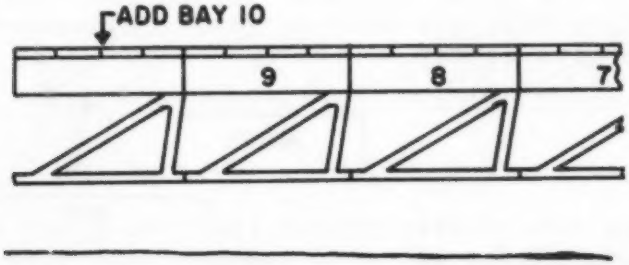


For 2E + 12 (w/7N1), PROCEED TO STEP ⑭.

⑫ Boom bridge to panel point given below.

Bridge	Boom To
2E + 10 (w/6N1)	5pl

⑬ Pin bay 10 to end of bay 9.



2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

NOTE

The launch of all bridges will be done with a vehicle.

(74) Launch bridge to panel point given below for bridge being constructed.

Bridge Length	Launch To
2E + 1 and 2E + 4 (w/5N1)	Cp1 (over FRB)
2E + 2 and 2E + 3	Bp7 (over FRB)
2E + 4 (w/4N1) and 2E + 11 (w/8N1)	Ap2 (over FRB)
2E + 5 (w/5N1) and 2E + 9 (w/7N1)	Bp0 (over FRB)
2E + 5 (w/6N1) and 2E + 6 (w/6N1)	Cp4 (over FRB)
2E + 6 (w/5N1)	1p0 (over FRB)
2E + 7 (w/5N1)	2p0 (over FRB)
2E + 7 (w/6N1)	Bp2 (over FRB)
2E + 8 (w/6N1)	1p2 (over FRB)
2E + 8 (w/7N1)	Bp5 (over FRB)
2E + 9 (w/6N1)	2p3 (over FRB)
2E + 10 (w/6N1)	3p3 (over FRB)
2E + 10 (w/7N1)	1p4 (over FRB)
2E + 11 (w/7N1)	2p5 (over FRB)
2E + 12 (w/7N1)	3p5 (over FRB)
2E + 12 (w/8N1)	1p6 (over FRB)

(75) Set up landing roller pedestal (LRP) MK1 on far bank. With the panel point of launch over the FRB, check to ensure that the landing zone (LZ) number given below is over the center of the LRP roller.

NOTE

A landing zone number higher than the given LZ is always permitted. Never use a LZ number lower than given for the bridge being constructed.

Bridge	LZ
2E + 1, 2E + 4 (w/4N1), 2E + 9 (w/6N1), and 2E + 10 (w/6N1)	3
2E + 2	8
2E + 3, 2E + 5 (w/5N1), 2E + 6 (w/5N1), 2E + 7 (w/5N1&6N1), 2E + 8 (w/6N1) 2E + 11 (w/7N1) and 2E + 12 (w/7N1)	2
2E + 4 (w/5N1) and 2E + 5 (w/6N1)	6
2E + 6 (w/6N1), 2E + 9 (w/7N1), 2E + 10 (w/7N1), 2E + 11 (w/8N1), and 2E + 12 (w/8N1)	1
2E + 8 (w/7N1)	4

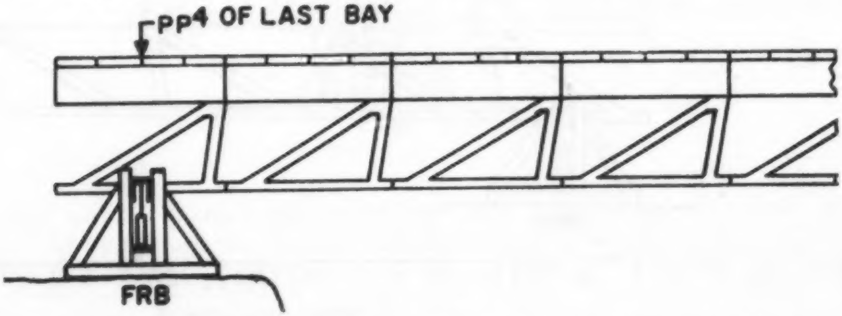
2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(76) Continue launch until panel point given below is over the FRB.

Bridge	Panel Point
2E + 1 and 2E + 4 (w/5N1)	Bp1
2E + 2 and 2E + 3	Ap3
2E + 4 (w/4N1) and 2E + 11 (w/8N1)	1p6
2E + 5 (w/5N1) and 2E + 9 (w/7N1)	1p4
2E + 5 (w/6N1) and 2E + 6 (w/6N1)	Bp4
2E + 6 (w/5N1)	2p0
2E + 7 (w/5N1)	3p0
2E + 7 (w/6N1)	1p2
2E + 8 (w/6N1)	2p2
2E + 8 (w/7N1)	Ap1
2E + 9 (w/6N1)	3p3
2E + 10 (w/6N1)	4p3
2E + 10 (w/7N1)	2p4
2E + 11 (w/7N1)	3p5
2E + 12 (w/7N1)	4p5
2E + 12 (w/8N1)	2p6

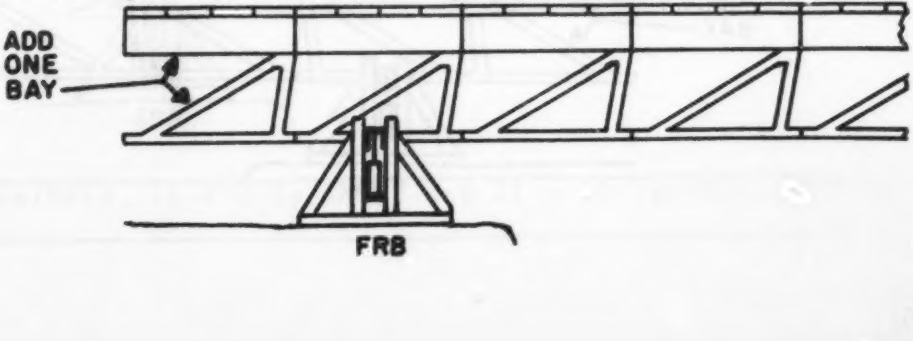
(77) Disassemble rear roller beam.

(78) Continue launch until panel point 4 of last bay is over the FRB. Stop launch, lock rollers and remove push bar from bridge.



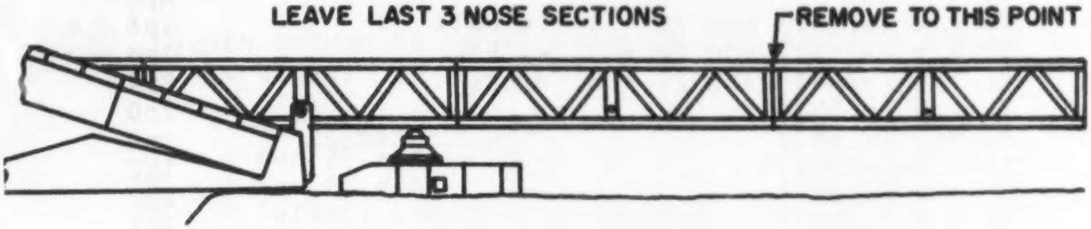
For 2E + 1, 2E + 2, 2E + 4 (w/4N1), 2E + 7 (w/5N1) and 2E + 10 (w/6N1), PROCEED TO STEP (80).

(79) Pin 1 bay to end of last bay of bridge.



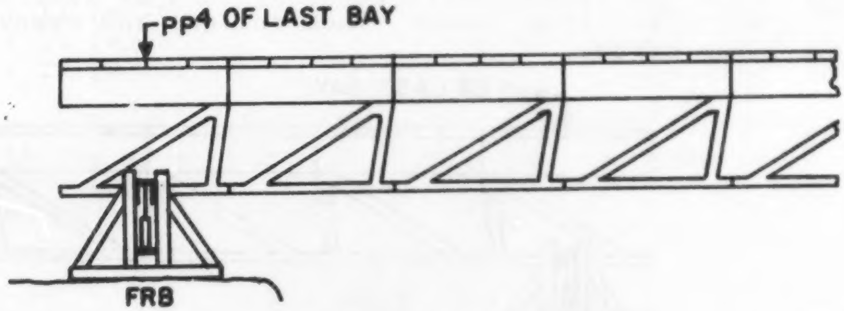
2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(80) Remove nose sections that have passed the landing roller pedestal. Leave the last 3 nose sections in place. These sections will be removed after the far bank end of bridge has been lowered to the ground.



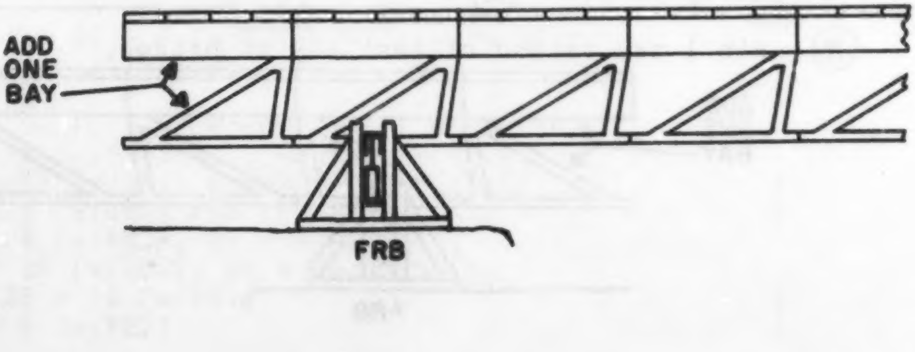
For 2E + 1, 2E + 2, 2E + 4 (w/4N1), 2E + 7 (w/5N1), and 2E + 10 (w/6N1), PROCEED TO STEP (90).

(81) Launch until panel point 4 of the last bay is over the FRB. Stop launch, lock rollers and remove push bar and cross girder.



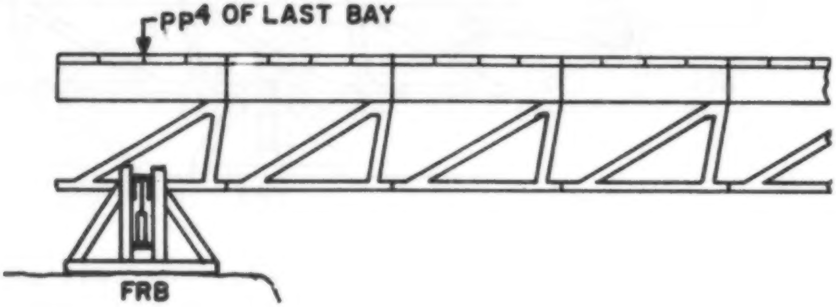
For 2E + 3, 2E + 5 (w/5N1), 2E + 6 (w/5N1), 2E + 9 (w/6N1), and 2E + 12 (w/7N1), PROCEED TO STEP (90).

(82) Pin 1 bay to the end of last bay of bridge.



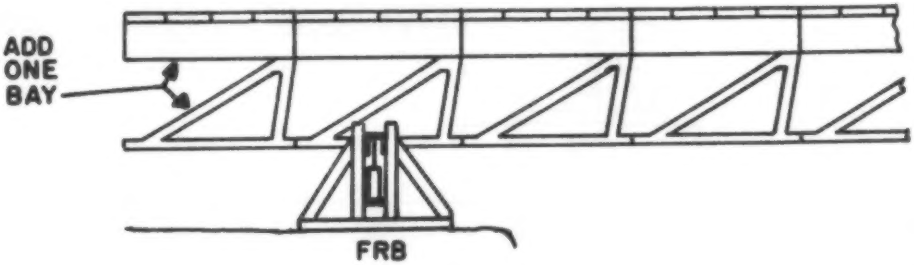
2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(83) Launch until panel point 4 of the last bay is over the FRB. Stop launch, lock rollers and remove push bar and cross girder.

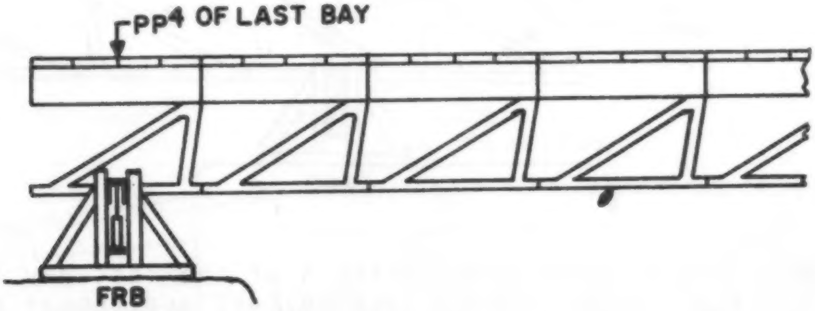


For 2E + 4 (w/5N1), 2E + 8 (w/6N1), and 2E + 11 (w/7N1), PROCEED TO STEP (90).

(84) Pin 1 bay to the end of last bay of bridge.



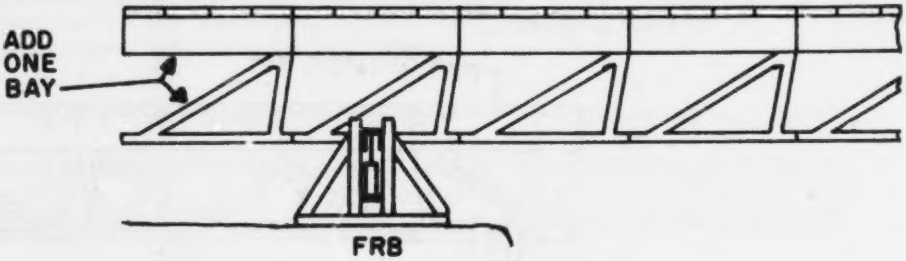
(85) Launch until panel point 4 of the last bay is over the FRB. Stop launch, lock rollers and remove push bar and cross girder.



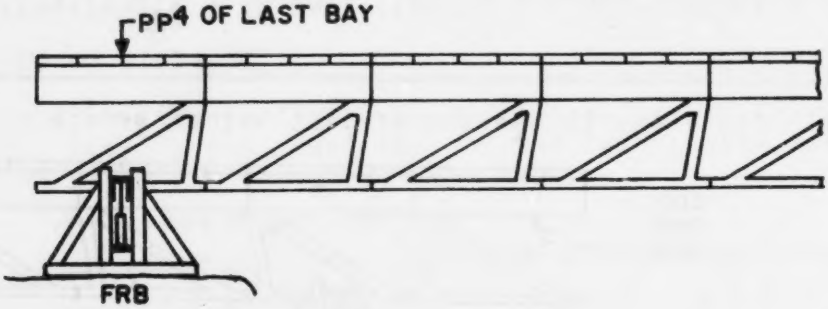
For 2E + 5 (w/6N1), 2E + 7 (w/6N1), and 2E + 10 (w/7N1), PROCEED TO STEP (90).

2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

(86) Pin 1 bay to the end of last bay of bridge.

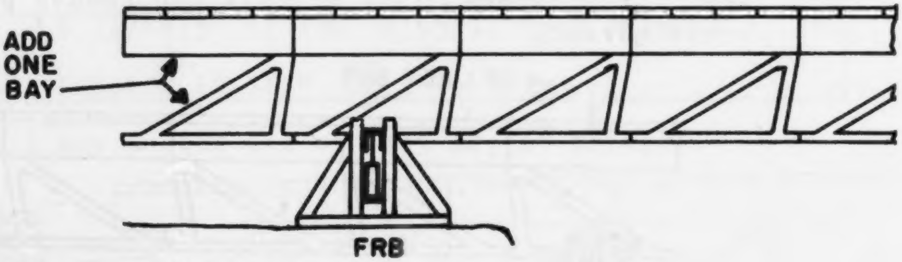


(87) Launch until panel point 4 of the last bay is over the FRB. Stop launch, lock rollers and remove push bar and cross girder.



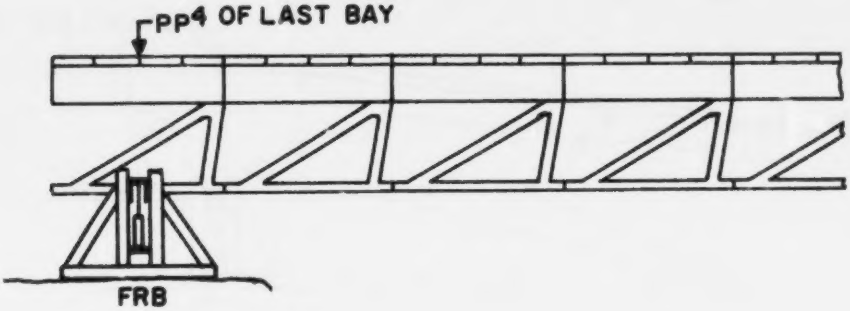
For 2E + 6 (w/6N1), 2E + 8 (w/7N1), 2E + 9 (w/7N1) and 2E + 12 (w/8N1), PROCEED TO STEP (90) .

(88) Pin 1 bay to the end of last bay of bridge.

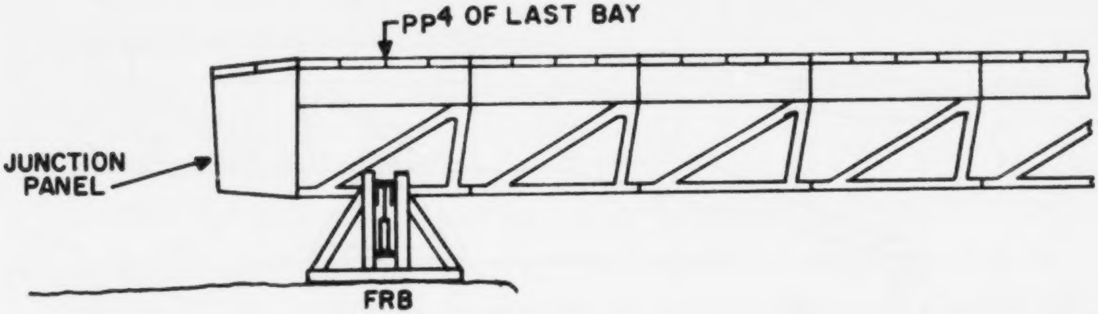


(89) Launch until panel point 4 of the last bay is over the FRB. Stop launch, lock rollers and remove push bar and cross girder.

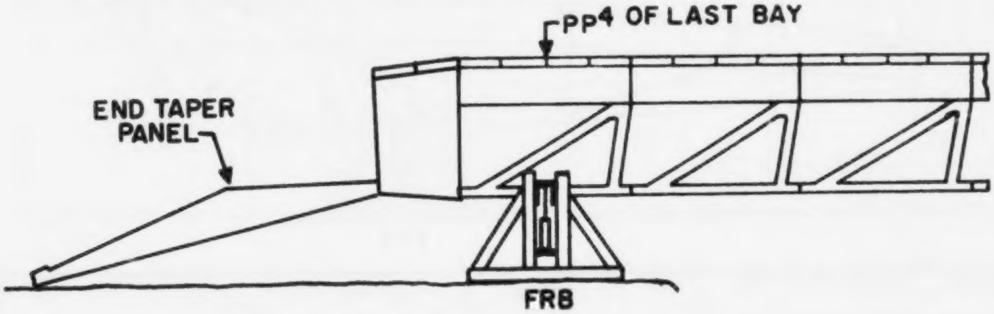
2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).



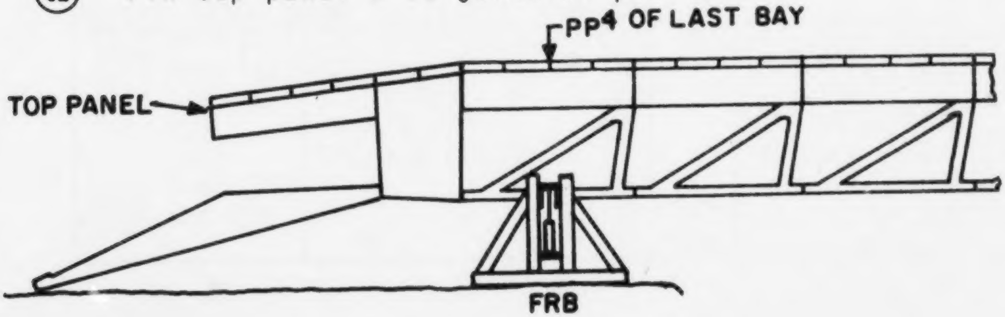
(90) Pin junction panel to top and bottom panel.



(91) Pin end taper panel to bottom of junction panel.

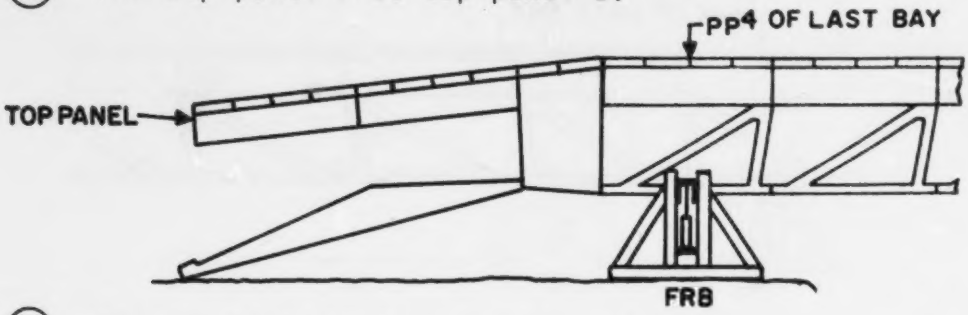


(92) Pin top panel E to junction panel.

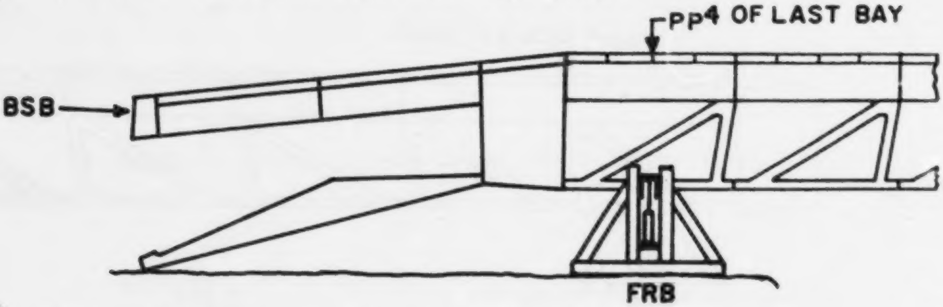


2-28. ASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site) (Cont).

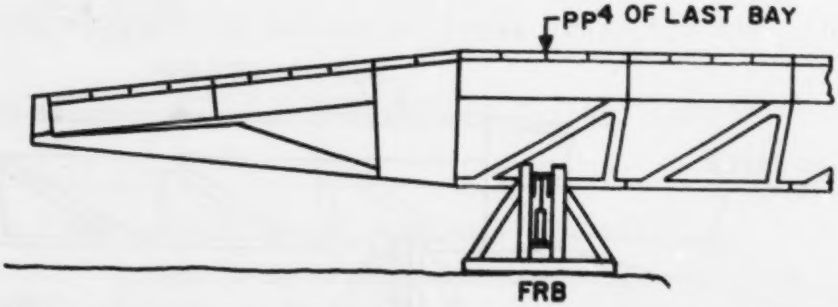
(93) Pin top panel F to top panel E.



(94) Connect bankseat beam to top panel F.



(95) Pin end taper panels to bankseat beam.



For all bridges, PROCEED TO STEP 2.a. (78) of paragraph 2-25. Perform steps (78) through (92) to complete bridge.

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank).

a. Paragraph 2-29 will describe the step by step procedures for disassembly of double story - 2E + 1 through 2E + 12 bay bridges on restricted site - near bank.

b. The disassembly procedures are basically the reverse of assembly, but there are differences, refer to Table 2-39. Because of these differences, the user is advised to follow the step by step procedures carefully.

c. Once the user becomes familiar with the step by step procedures for disassembly, it will be possible to disassemble any double story - 2E + 1 through 2E + 12 bay bridge using the De-launch Table 2-40.

d. This table provides the necessary instructions to disassemble and de-launch all bridges.

e. DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

Table 2-39. Required Steps Per Bridge Length.

2E + 1	2E + 2	2E + 3	2E + 4	
w/3N1	w/4N1	w/4N1	w/4N1	w/5N1
For all double story bridges - 2E + 1 thru 2E + 12, perform steps 1.a.(1) thru 2.a.(12) in paragraph 2-26, then perform steps below for bridge being disassembled.				
(13) thru (18) (29) thru (32) (63) (73) thru (77) (80)	(13) thru (18) (29) thru (32) (63) (72) thru (77) (79) and (80)	(13) thru (20) (29) thru (32) (63) (72) thru (77) (79) and (80)	(13) thru (18) (29) thru (33) (41) and (42) (50) (63) (72) thru (77) (79) and (80)	(13) thru (20) (29) thru (32) (63) (71) thru (77) (79) and (80)

2E + 5		2E + 6	
w/5N1	w/6N1	w/5N1	w/6N1
For all double story bridges - 2E + 1 thru 2E + 12, perform steps 1.a.(1) thru 2.a.(12) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(13) thru (20) (29) thru (33) (41) and (42) (50) (63) (71) thru (77) (79) and (80)	(13) thru (22) (29) thru (32) (63) (70) thru (77) (79) and (80)	(13) thru (20) (29) thru (33) (40) (42) (49) (63) (70) thru (77) (79) and (80)	(13) thru (26) (29) thru (32) (63) (70) thru (77) (79) and (80)

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

Table 2-39. Required Steps Per Bridge Length.

2E + 7		2E + 8	
w/5N1	w/6N1	w/6N1	w/7N1
For all double story bridges - 2E + 1 thru 2E + 12, perform steps 1.a.(1) thru 2.a.(12) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(13) thru (18) (29) thru (33) (38) (42) (47) (51) (56) and (87) (63) (71) thru (80)	(13) thru (24) (29) thru (33) (41) (63) (70) thru (80)	(13) thru (26) (29) thru (33) (39) (42) (48) (51) (57) (63) (70) thru (80)	(13) thru (26) (29) thru (32) (61) (63) (65) (69) thru (80)

2E + 9		2E + 10	
w/6N1	w/7N1	w/6N1	w/7N1
For all double story bridges - 2E + 1 thru 2E + 12, perform steps 1.a.(1) thru 2.a.(12) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(13) thru (20) (29) thru (33) (37) (42) (46) (51) (55) (58) (61) thru (63) (70) thru (80)	(13) thru (26) (29) thru (33) (40) (63) (65) (69) thru (80)	(13) thru (18) (29) thru (33) (35) (42) (44) (51) (53) (58) (60) (63) (70) thru (80)	(13) thru (24) (29) thru (33) (38) (42) (47) (51) (56) (63) (65) (69) thru (80)

2E + 11		2E + 12	
w/7N1	w/8N1	w/7N1	w/8N1
For all double story bridges - 2E + 1 thru 2E + 12, perform steps 1.a.(1) thru 2.a.(12) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(13) thru (22) (29) thru (33) (36) (42) (45) (51) (54) and (55) (63) thru (65) (69) thru (80)	(13) thru (33) (39) (42) (48) (63) (66) (68) thru (80)	(13) thru (20) (29) thru (34) (42) and (43) (51) thru (53) (58) thru (60) (63) (66) thru (80)	(13) thru (26) (29) thru (33) (37) (42) (46) (51) (55) (58) (61) (63) (69) thru (80)

TABLE 2-40. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story
(Restricted Site - Near Bank)

Bridge ft Length m	37 11.3	43 13.1	49 14.9	55 16.8		61 18.6		67 20.4	
2E + No. of Bays	1	2	3	4		5		6	
Nose Construction	3N1	4N1	4N1	4N1	5N1	5N1	6N1	5N1	6N1
Build	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d
De-Launch To and Remove	1p4 E	2p4 E	3p4 E	4p4 E	4p4 E	5p4 E	5p4 E	6p4 E	6p4 E
De-Launch To and Remove			2p4 3		3p4 4	4p4 5	4p4 5	5p4 6	5p4 6
De-Launch To and Remove							3p4 4		4p4 5
De-Launch To and Remove									3p4 4
De-Launch To and Remove									2p4 3
De-Launch To and Add	Bp1 RRB	Ap3 RRB	Ap3 RRB	1p6 RRB	Bp1 RRB	1p4 RRB	Bp4 RRB	2p0 RRB	Bp4 RRB
De-Launch To and Recover	Cp1 LRP	Bp7 LRP	Bp7 LRP	Ap2 LRP	Cp1 LRP	Bp0 LRP	Cp4 LRP	1p0 LRP	Cp4 LRP
Boom To and Remove (CG)				2p4 4 (Bp2)		2p2 4 (Bp4)		2p6 5 (Bp0)	
Boom To and Remove				1p7 3		1p5 3		2p4 4	
(CG) Boom To and Remove	1p3 3N1	1p6 4N1 and 2	1p4 4N1 and 2	(Bp7) 1p4 4N1 and 2	1p4 5N1 and 2	(Cp1) 1p4 5N1 and 2	1p4 6N1 and 2	(Bp4) 1p4 5N1, 3, and 2	1p4 6N1 and 2
Complete By:	Note e	Note e	Note e	Note e	Note e	Note e	Note e	Note e	Note e

NOTES:
a. Position FRB under RBSB.
b. Position center of LR (in LRP) 9 ft (2.7 m) from BSB.
c. Add 3 LNH. Reposition LRP [base 9 in (23 cm) from BSB].
d. Add remaining nose sections.
e. Disassemble 1 + E and FRB. Clear site.

TABLE 2-40. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site - Near Bank) (Cont).

Bridge ft Length m	73 22.3		79 24.1		85 25.9	
2E + No. of Bays	7		8		9	
Nose Construction	5N1	6N1	6N1	7N1	6N1	7N1
Build	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d
De-Launch To and Remove	7p4 E	7p4 E	8p4 E	8p4 E	9p4 E	9p4 E
De-Launch To and Remove		6p4 7	7p4 8	7p4 8	8p4 9	8p4 9
De-Launch To and Remove		5p4 6	6p4 7	6p4 7		7p4 8
De-Launch To and Remove		4p4 5		5p4 6		6p4 7
De-Launch To and Remove				4p4 5		5p4 6
De-Launch To and Add	3p0 RRB	1p2 RRB	2p2 RRB	Ap1 RRB	3p3 RRB	1p4 RRB
De-Launch To and Recover	2p0 LRP	Bp2 LRP	1p2 LRP	Bp5 LRP	2p3 LRP	Bp0 LRP
Boom To and Remove (CG)	3p7 7 (1p4)	1p7 4 (Bp7)	3p0 6 (Ap2)		4p0 8 (1p6)	2p1 5 (Bp5)
Boom To and Remove (CG)	3p2 6 (1p0)		2p4 5 (Bp2)		3p4 7 (1p2)	
Boom To and Remove (CG)	2p2 5 and 4 (Bp4)		1p7 4 (Bp7)		3p0 6 (Ap2)	
Boom To and Remove (CG)					1p7 5 and 4 (Bp7)	
Boom To and Remove (CG)	1p4	1p4	1p4	1p4 4 (Cp2)	1p4	1p4 4 (Bp5)
Remove	5N1, 3 and 2	6N1, 3 and 2	6N1, 3 and 2	7N1, 3 and 2	6N1, 3 and 2	7N1, 3 and 2
Complete By:	Note e	Note e	Note e	Note e	Note e	Note e

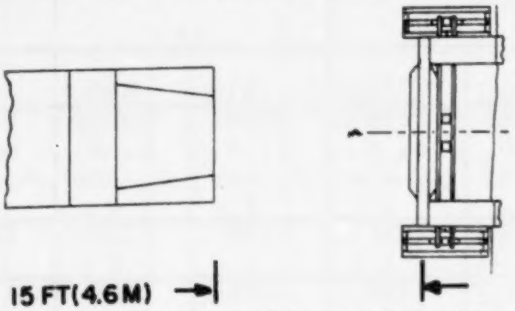
TABLE 2-40. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site - Near Bank) (Cont).

Bridge ft Length m	91 27.7		97 29.6		103 31.4	
2E + No. of Bays	10		11		12	
Nose Construction	6N1	7N1	7N1	8N1	7N1	8N1
Build	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d
De-Launch To and Remove	10p4 E	10p4 E	11p4 E	11p4 E	12p4 E	12p4 E
De-Launch To and Remove		9p4 10	10p4 11	10p4 11	11p4 12	11p4 12
De-Launch To and Remove		8p4 9	9p4 10	9p4 10		10p4 11
De-Launch To and Remove		7p4 8		8p4 9		9p4 10
De-Launch To and Remove				7p4 8		8p4 9
De-Launch To and Remove				6p4 7		
De-Launch To and Add	4p3 RRB	2p4 RRB	3p5 RRB	1p6 RRB	4p5 RRB	2p6 RRB
De-Launch To and Recover	3p3 LRP	1p4 LRP	2p5 LRP	Ap2 LRP	3p5 LRP	1p6 LRP
Boom To and Remove (CG)	5p1 10 (2p7)	3p2 7 (1p0)	4p2 9 (2p1)	2p3 6 (Bp3)	5p3 11 (3p1)	3p4 8 (1p2)
Boom To and Remove (CG)	4p4 9 (2p3)	2p6 6 (Bp0)	3p6 8 (1p4)	1p6 5 (Cp0)	4p7 10 (2p5)	3p0 7 (Ap2)
Boom To and Remove (CG)	4p0 8 (1p6)	2p1 5 (Bp5)	2p6 7 and 6 (Bp0)		3p6 9 and 8 (1p4)	2p3 6 (Bp3)
Boom To and Remove (CG)	3p0 7 and 6 (Ap2)				2p6 7 and 6 (Cp2)	1p6 5 (Cp0)
Boom To and Remove (CG)	1p4	1p4 4 (Bp5)	1p4 5 and 4 (Cp2)	1p4 8N1 and 4 (Cp2)	1p4 8N1, 5 and 4 (Cp2)	1p4 8N1 and 4 (Cp2)
Remove	5N1, 3 and 2	7N1, 3 and 2	7N1, 3 and 2	7N1, 3 and 2	7N1, 3 and 2	7N1, 3 and 2
Complete By:	Note e	Note e	Note e	Note e	Note e	Note e

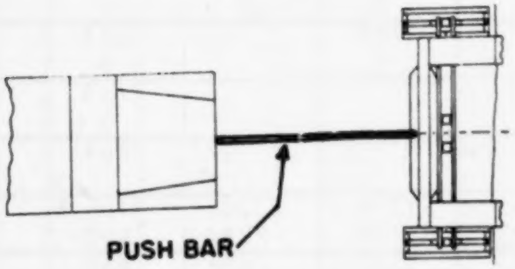
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

For all double story bridges - 2E + 1 thru 2E + 12, refer to paragraph 2-26. Perform steps 1.a.(1) thru 2.a.(12), then proceed to procedures below.

⑬ Position vehicle near end of bridge as shown.



⑭ Connect vehicle to bridge with short push bar.



NOTE

The bridge will be held in position by the vehicle and the locked rollers of the roller beam during the assembly of the launching nose.

⑮ Assemble launching nose.

⑯ Using LRP, raise bridge off ground until jack is fully extended.

NOTE

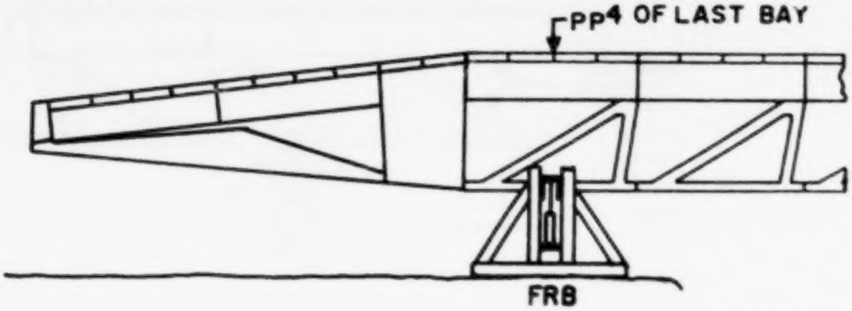
Vehicle is holding bridge and roller catches in FRB are locked.

⑰ De-launch bridge to panel point 4 of the last bay of bridge.

(a) Unlock roller catches on FRB.

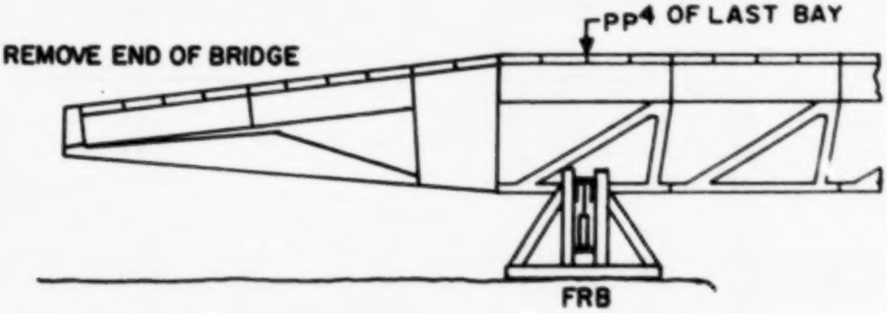
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(b) De-launch bridge until panel point 4 of last bay of bridge is over FRB.



(c) Stop de-launch and lock roller catches in FRB. Disconnect vehicle from bridge.

⑱ Disassemble the end of bridge.



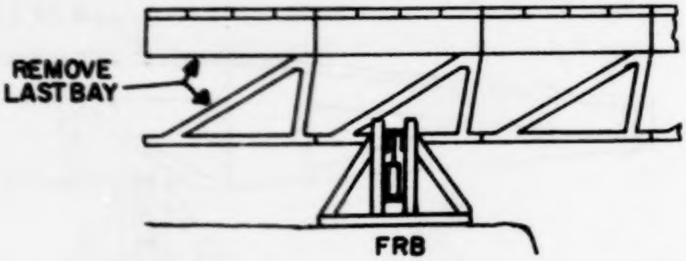
For 2E + 1, 2E + 2, 2E + 4 (w/4N1), 2E + 7 (w/5N1) and 2E + 10 (w/6N1), PROCEED TO STEP ㉙.

⑲ Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 3	2p4
2E + 4 (w/5N1)	3p4
2E + 5 (w/5N1&6N1)	4p4
2E + 6 (w/5N1&6N1)	5p4
2E + 7 (w/6N1)	6p4
2E + 8 (w/6N1&7N1)	7p4
2E + 9 (w/6N1&7N1)	8p4
2E + 10 (w/7N1)	9p4
2E + 11 (w/7N1&8N1)	10p4
2E + 12 (w/7N1&8N1)	11p4

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

⑳ Remove last bay of bridge.

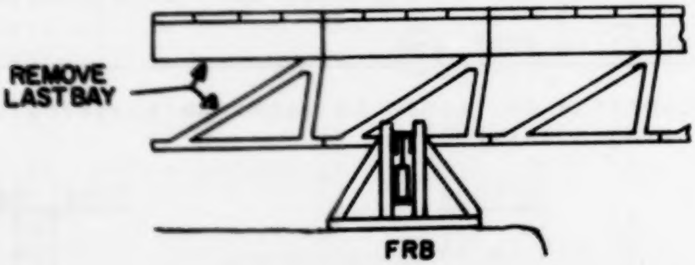


For 2E + 3, 2E + 4 (w/5N1), 2E + 5 (w/5N1), 2E + 6 (w/5N1), 2E + 9 (w/6N1), and 2E + 12 (w/7N1), PROCEED TO STEP ㉙.

㉑ Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 5 (w/6N1)	3p4
2E + 6 (w/6N1)	4p4
2E + 7 (w/6N1)	5p4
2E + 8 (w/6N1&7N1)	6p4
2E + 9 (w/7N1)	7p4
2E + 10 (w/7N1)	8p4
2E + 11 (w/7N1&8N1)	9p4
2E + 12 (w/8N1)	10p4

㉒ Remove last bay of bridge.



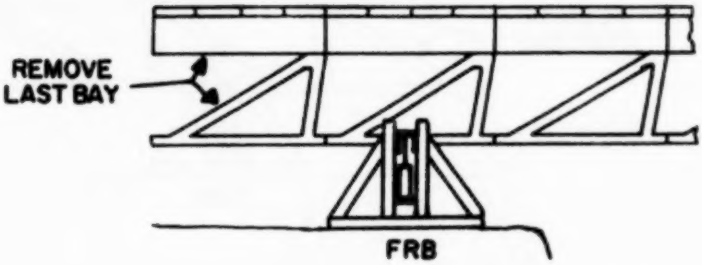
For 2E + 5 (w/6N1), 2E + 8 (w/6N1), and 2E + 11 (w/7N1), PROCEED TO STEP ㉙

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

㉓ Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 6 (w/6N1)	3p4
2E + 7 (w/6N1)	4p4
2E + 8 (w/7N1)	5p4
2E + 9 (w/7N1)	6p4
2E + 10 (w/7N1)	7p4
2E + 11 (w/8N1)	8p4
2E + 12 (w/8N1)	9p4

㉔ Remove last bay of bridge.

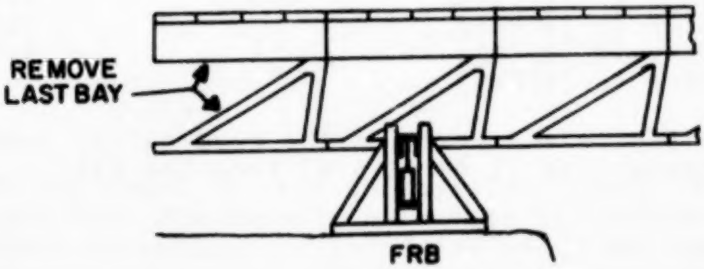


For 2E + 7 (w/6N1) and 2E + 10 (w/7N1), PROCEE TO STEP ㉙.

㉕ Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 6 (w/6N1)	2p4
2E + 8 (w/7N1)	4p4
2E + 9 (w/7N1)	5p4
2E + 11 (w/8N1)	7p4
2E + 12 (w/8N1)	8p4

㉖ Remove last bay of bridge.



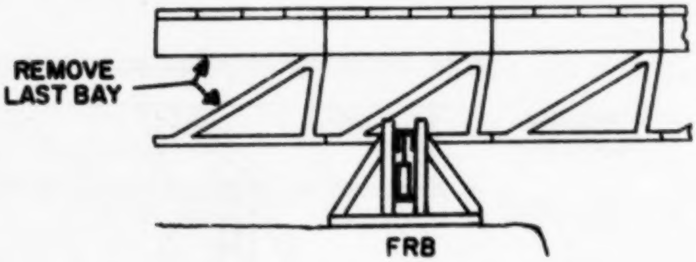
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

For 2E + 6 (w/6N1), 2E + 8 (w/7N1), and 2E + 9 (w/7N1), PROCEED TO STEP ㉙.

㉗ Continue de-launch to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 11 (w/8N1)	8p4

㉘ Remove last bay of bridge.



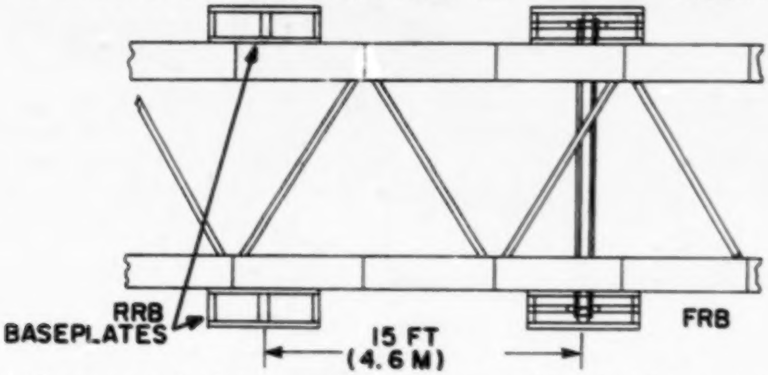
㉙ De-launch until panel point given below is over the FRB. Do not disconnect vehicle from bridge.

Bridge	Panel Point
2E + 1 and 2E + 4 (w/5N1)	Bp1
2E + 2 and 2E + 3	Ap3
2E + 4 (w/4N1) and 2E + 11 (w/8N1)	1p6
2E + 5 (w/5N1) and 2E + 9 (w/7N1)	1p4
2E + 6 (w/5N1)	2p0
2E + 6 (w/6N1)	Bp4
2E + 7 (w/5N1)	3p0
2E + 7 (w/6N1)	1p2
2E + 8 (w/6N1)	2p2
2E + 8 (w/7N1)	Ap1
2E + 9 (w/6N1)	3p3
2E + 10 (w/6N1)	4p3
2E + 10 (w/7N1)	2p4
2E + 11 (w/7N1)	3p5
2E + 12 (w/7N1)	4p5
2E + 12 (w/8N1)	2p6

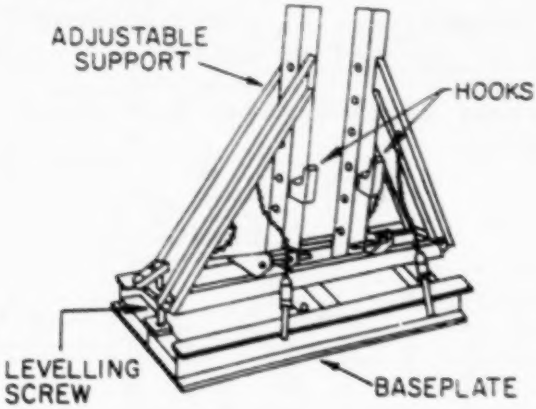
㉚ Assemble and position the rear roller beam (RRB) over the centerline 15 ft (4.6 m) from the FRB.

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(a) Put 2 double story baseplates on site as shown.

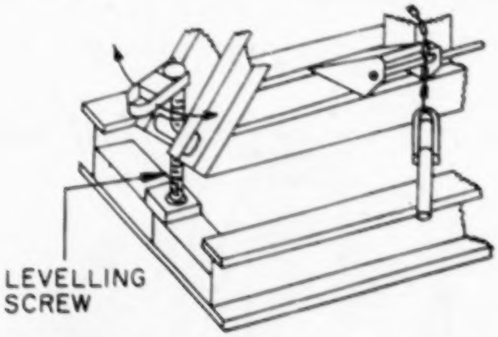


(b) Position and hold a roller beam adjustable support on each RRB baseplate.



(c) Ensure that hooks on supports face centerline.

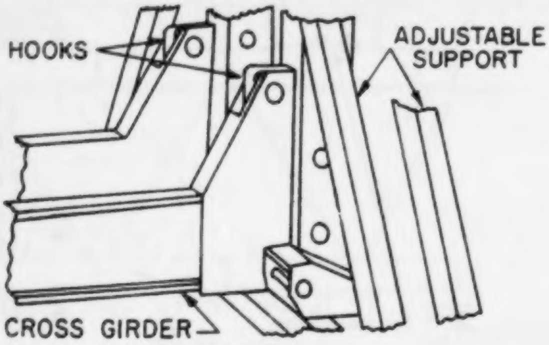
(d) Seat levelling screws in holes of baseplate.



(e) Turn the front or rear adjustable support levelling screws into the baseplate sockets so that adjustable support is vertical. Allow 1/4 in (6 mm) space between screw and socket so that the support may rock back and forth on the pivot (front to rear).

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

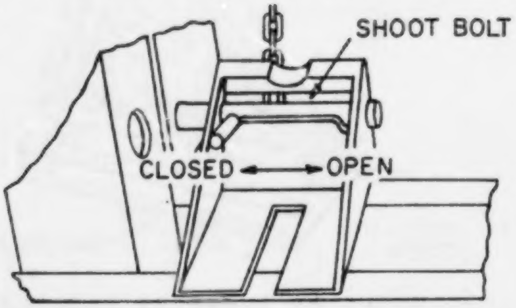
(f) Hook a building frame cross girder on adjustable supports for RRB.



NOTE

One of the supports may have to be moved slightly so both ends of the cross girder can be attached.

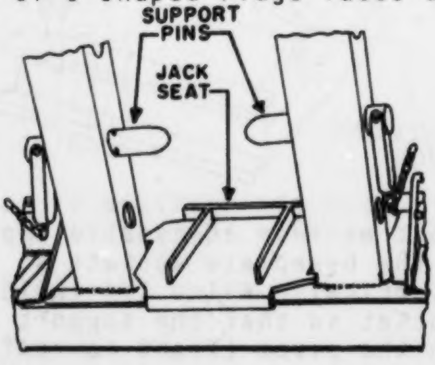
(g) Push shoot bolts through each cross girder and support bracket.



(h) Place a jack seat over support pins or lower rail in each adjustable support.

(i) Curved cut-outs fit over pins or rail in bottom of support.

(j) Open end of U-shaped ridge faces away from centerline.

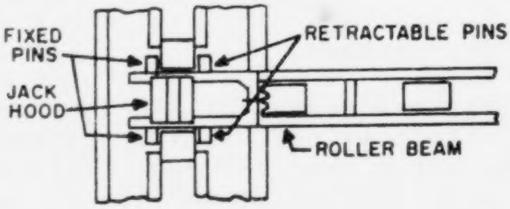


2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

NOTE

If roller beam is to be set higher than the lowest setting, push captive support pin through each adjustable support post at proper height. If support pins are used, ensure that they are fully seated (pushed in) and that the jack seat is fully seated on each pin.

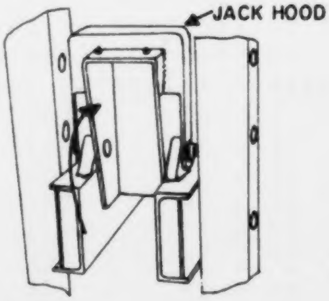
(k) Place a roller beam into the adjustable supports of the RRB.



(l) Roller beam can be slid into supports from the side or put in over the top. Ensure that retractable pins are fully seated (pushed in) to clear the supports if the roller beam is slid in from the side.

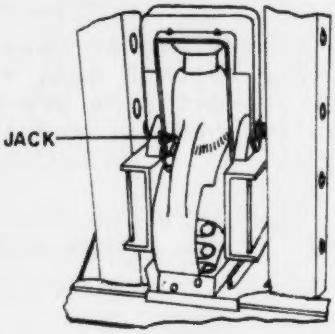
(m) Ensure that the retractable pins are pushed out to lock beam into supports once fixed pins are butted against posts of support.

(n) Raise jack hood on each end of roller beam.



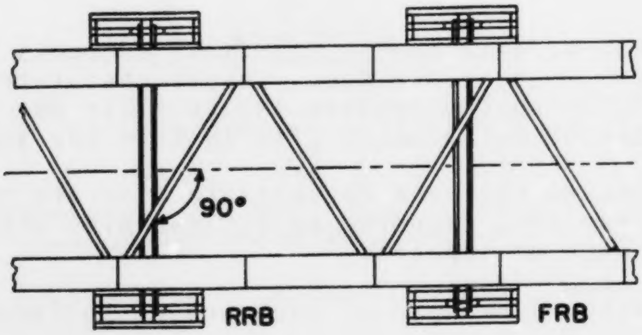
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(o) Position a jack on each jack seat and operate jack to raise roller beam 1/2 in (13 mm).



(p) Lock roller catches.

(q) Ensure that the center of RRB is over centerline of bridge. If it is not, pull on baseplates until center of RRB is directly over RRB peg. Ensure taht RRB is at right angle (90°) to centerline of bridge.



(r) Position the roller beam at the height desired for delaunch. During this positioning, level the roller beam using a carpenter's level.

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

㉛ Continue de-launch until panel point given below is over the FRB. Do not disconnect vehicle from bridge.

Bridge	Panel Point
2E + 1 and 2E + 4 (w/5N1)	Cp1
2E + 2 and 2E + 3	Bp7
2E + 4 (w/4N1) and 2E + 11 (w/8N1)	Ap2
2E + 5 (w/5N1) and 2E + 9 (w/7N1)	Bp0
2E + 5 (w/6N1) and 2E + 6 (w/6N1)	Cp4
2E + 6 (w/5N1)	1p0
2E + 7 (w/5N1)	2p0
2E + 7 (w/6N1)	Bp2
2E + 8 (w/6N1)	1p2
2E + 8 (w/7N1)	Bp5
2E + 9 (w/6N1)	2p3
2E + 10 (w/6N1)	3p3
2E + 10 (w/7N1)	1p4
2E + 11 (w/7N1)	2p5
2E + 12 (w/7N1)	3p5
2E + 12 (w/8N1)	1p6

NOTE

The center of gravity of the bridge is over the FRB. It is at this point that any minor adjustments in the RRB placement must be made. Ensure that the bridge will come to rest on the roller beams correctly. The bridge should rest between the flanges of the rollers, not on top of them.

㉜ Recover LRP.

For 2E + 1, 2E + 2, 2E + 3, 2E + 4 (w/5N1), 2E + 5 (w/6N1), 2E + 6 (w/6N1) and 2E + 8 (w/7N1), PROCEED TO STEP (63).

㉝ Boom to panel point given below for bridge being disassembled.

Bridge	Panel Point	Bridge	Panel Point
2E + 4 (w/4N1)	2p4	2E + 9 (w/7N1)	2p1
2E + 5 (w/5N1)	2p2	2E + 10 (w/6N1)	5p1
2E + 6 (w/5N1)	2p6	2E + 10 (w/7N1)	3p2
2E + 7 (w/5N1)	3p7	2E + 11 (w/7N1)	4p2
2E + 7 (w/6N1)	1p7	2E + 11 (w/8N1)	2p3
2E + 8 (w/6N1)	3p0	2E + 12 (w/7N1)	5p3
2E + 9 (w/6N1)	4p0	2E + 12 (w/8N1)	3p4

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

For 2E + 4 (w/4N1), 2E + 5 (2/5N1) and 2E + 7 (w/6N1), PROCEED TO STEP ㊶ .

For 2E + 6 (w/5N1) and 2E + 9 (w/7N1), PROCEED TO STEP ㊵ .

For 2E + 8 (w/6N1) and 2E + 11 (w/8N1), PROCEED TO STEP ㊴ .

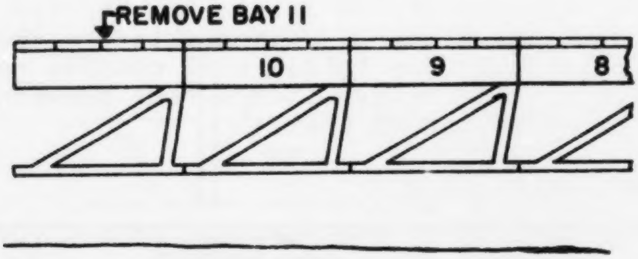
For 2E + 7 (w/5N1) and 2E + 10 (w/7N1), PROCEED TO STEP ㊳ .

For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP ㊲ .

For 2E + 11 (w/7N1), PROCEED TO STEP ㊱ .

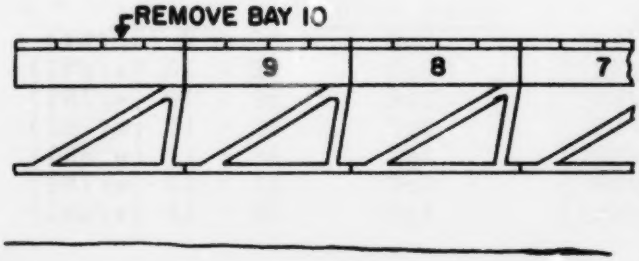
For 2E + 10 (w/6N1), PROCEED TO STEP ㉟ .

㉞ Remove bay 11.



For 2E + 12 (w/7N1), PROCEED TO STEP ㊷ .

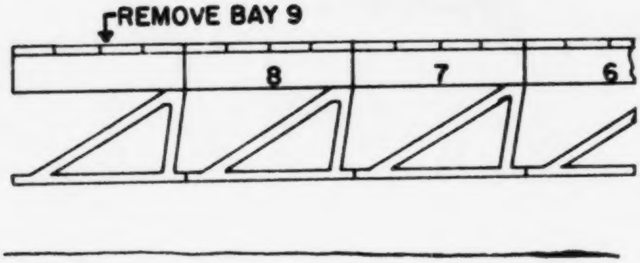
㉟ Remove bay 10.



For 2E + 10 (w/6N1), PROCEED TO STEP ㊷ .

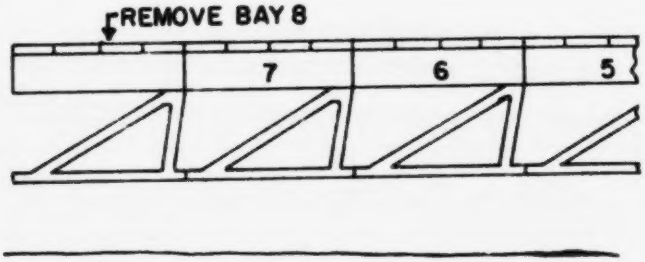
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

㊱ Remove bay 9.



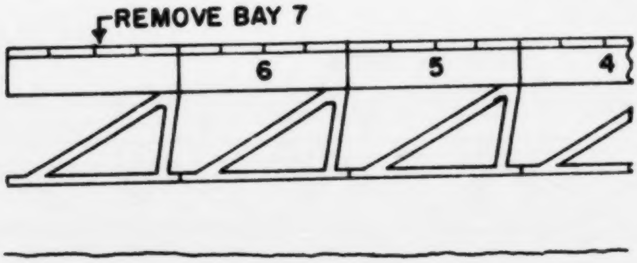
For 2E + 11 (w/7N1), PROCEED TO STEP ㊷.

㊲ Remove bay 8.



For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP ㊷.

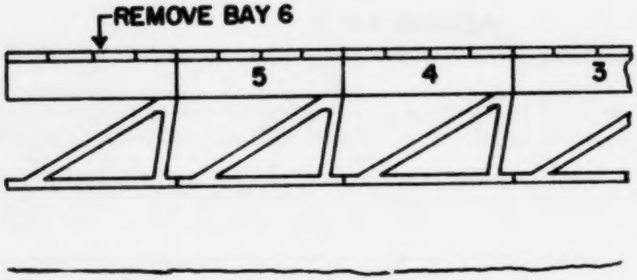
㊳ Remove bay 7.



For 2E + 7 (w/5N1) and 2E + 10 (w/7N1), PROCEED TO STEP ㊷.

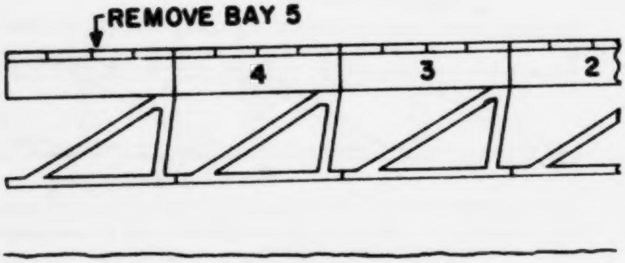
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

㊴ Remove bay 6.



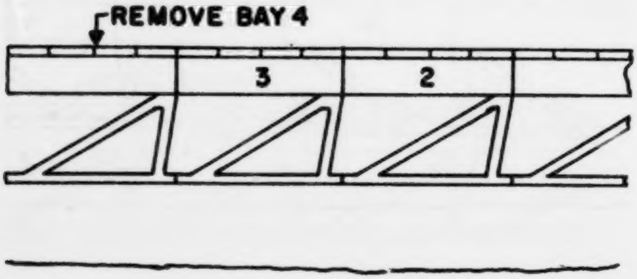
For 2E + 8 (w/6N1) and 2E + 11 (w/8N1), PROCEED TO STEP ㊷.

㊵ Remove bay 5.



For 2E + 5 (w/5N1), 2E + 6 (w/5N1) and 2E + 9 (w/7N1), PROCEED TO STEP ㊷.

㊶ Remove bay 4.



For 2E + 7 (w/6N1), PROCEED TO STEP (62).

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

㊷ Boom to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 4 (w/4N1)	1p7
2E + 5 (w/5N1)	1p5
2E + 6 (w/5N1) and 2E + 8 (w/6N1)	2p4
2E + 7 (w/5N1)	3p2
2E + 9 (w/6N1)	3p4
2E + 10 (w/6N1)	4p4
2E + 10 (w/7N1)	2p6
2E + 11 (w/7N1)	3p6
2E + 11 (w/8N1)	1p6
2E + 12 (w/7N1)	4p7
2E + 12 (w/8N1)	3p0

For 2E + 4 (w/4N1) and 2E +   (w/5N1), PROCEED TO STEP ㊿.

For 2E + 6 (w/5N1), PROCEED TO STEP ㊾.

For 2E + 7 (w/5N1) and 2E + 10 (w/7N1), PROCEED TO STEP ㊼.

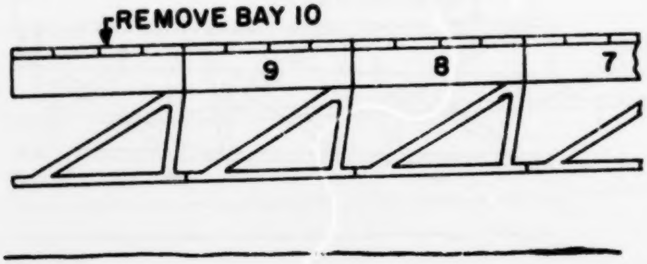
For 2E + 8 (w/6N1) and 2E + 11 (wa/8N1), PROCEED TO STEP ㊽.

For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP ㊻.

For 2E + 10 (w/6N1), PROCEED TO STEP ㊹.

For 2E + 11 (w/7N1), PROCEED TO STEP ㊺.

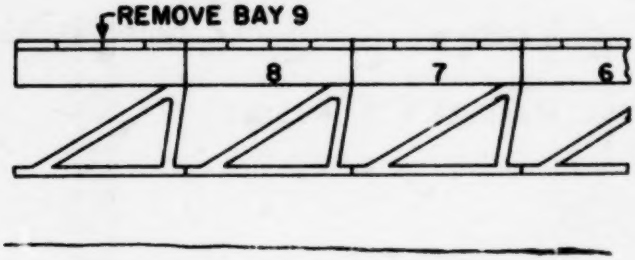
㊸ Remove bay 10.



For 2E + 12 (w/7N1), PROCEED TO STEP (51).

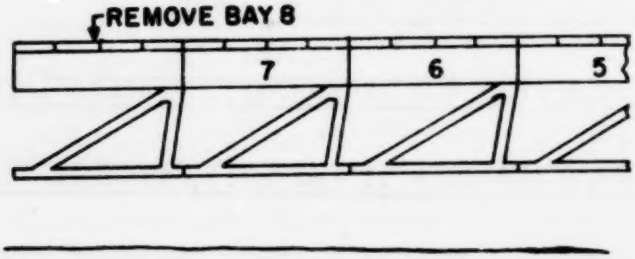
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(44) Remove bay 9.



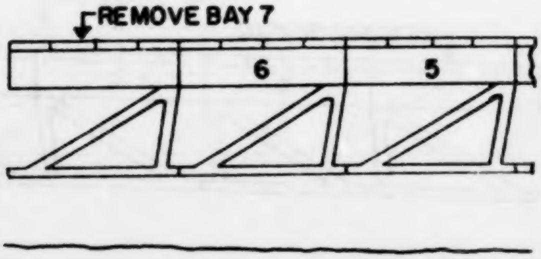
For 2E + 10 (w/6N1), PROCEED TO STEP (51).

(45) Remove bay 8.



For 2E + 11 (w/7N1), PROCEED TO STEP (51).

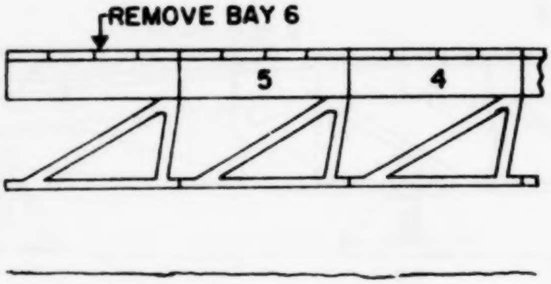
(46) Remove bay 7.



For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP (51).

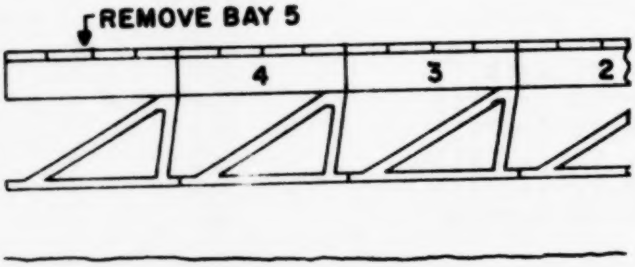
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

㊼ Remove bay 6.



For 2E + 7 (w/5N1) and 2E + 10 (w/7N1), PROCEED TO STEP (51).

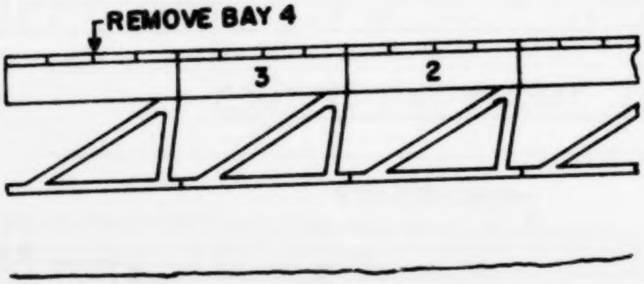
㊽ Remove bay 5.



For 2E + 8 (w/6N1), PROCEED TO STEP (51).

For 2E + 11 (w/8N1), PROCEED TO STEP (51).

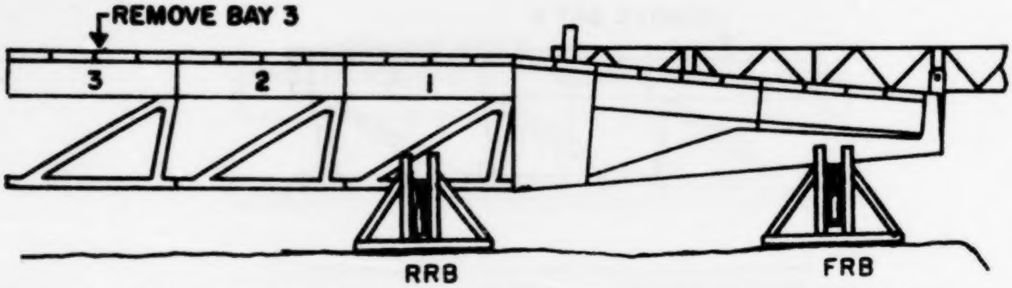
㊾ Remove bay 4.



For 2E + 6 (w/5N1), PROCEED TO STEP (63).

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(50) Remove bay 3.



For 2E + 4 (w/4N1) and 2E + 5 (w/5N1), PROCEED TO STEP (63).

(51) Boom to panel point given below for bridge being disassembled.

Bridge	Boom To
2E + 7 (w/5N1)	2p2
2E + 8 (w/6N1)	1p7
2E + 9 (w/6N1)	3p0
2E + 10 (w/6N1)	4p0
2E + 10 (w/7N1)	2p1
2E + 11 (w/7N1)	2p6
2E + 12 (w/7N1)	3p6
2E + 12 (w/8N1)	2p3

For 2E + 10 (w/6N1), PROCEED TO STEP (53).

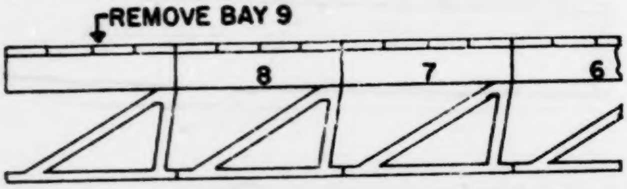
For 2E + 11 (w/7N1), PROCEED TO STEP (54).

For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP (55).

For 2E + 7 (w/5N1) and 2E +10 (w/7N1), PROCEED TO STEP (56).

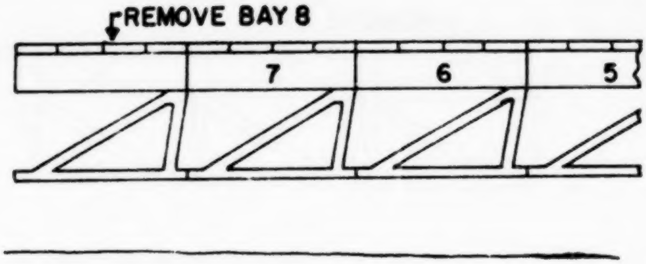
For 2E + 8 (w/6N1), PROCEED TO STEP (57).

(52) Remove bay 9.



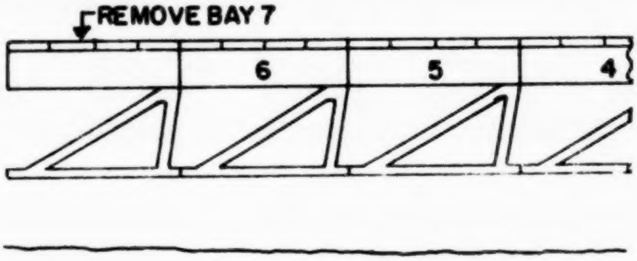
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(53) Remove bay 8.

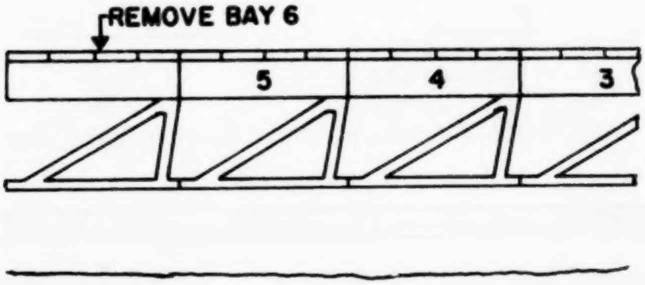


For 2E + 10 (w/6N1) and 2E + 12 (w/7N1), PROCEED TO STEP (58).

(54) Remove bay 7.



(55) Remove bay 6.

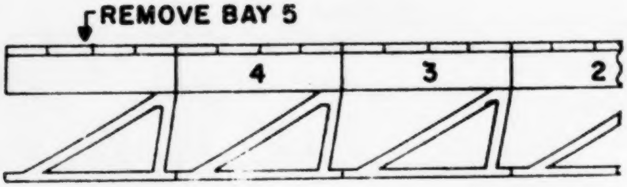


For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP (58).

For 2E + 11 (w/7N1), PROCEED TO STEP (63).

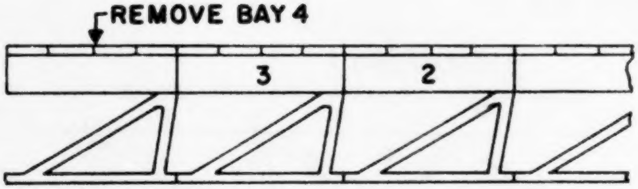
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(56) Remove bay 5.



For 2E + 10 (w/17N1), PROCEED TO STEP (63).

(57) Remove bay 4.



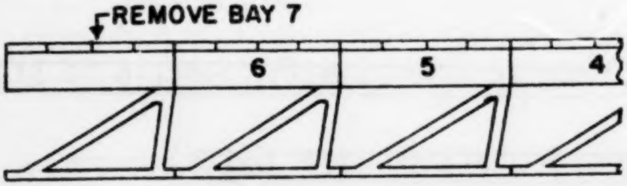
For 2E + 7 (w/5N1) and 2E + 8 (w/16N1), PROCEED TO STEP (63).

(58) Boom to panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 9 (w/6N1)	1p7
2E + 10 (w/6N1)	3p0
2E + 12 (w/7N1)	2p6
2E + 12 (w/8N1)	1p6

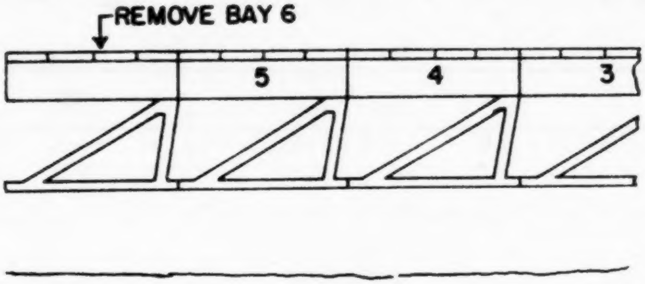
For 2E + 9 (w/6N1) and 2E + 12 (w/8N1), PROCEED TO STEP (61).

(59) Remove bay 7.



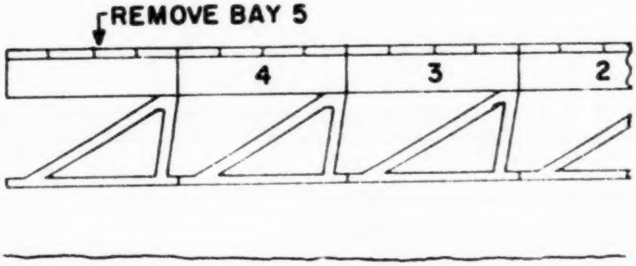
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(60) Remove bay 6.



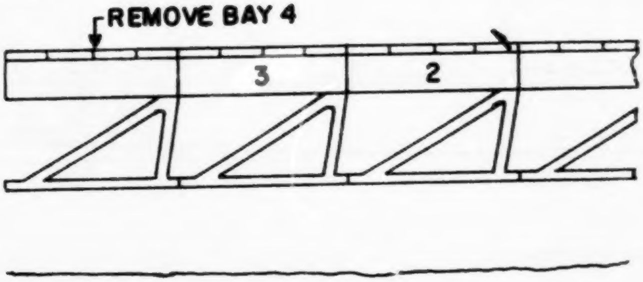
For 2E + 10 (w/6N1) and 2E + 12 (w/7N1), PROCEED TO STEP (63).

(61) Remove bay 5.



For 2E + 12 (w/8N1), PROCEED TO STEP (63).

(62) Remove bay 4.



(63) Boom to panel point given below for bridge disassembled.

Bridge	Panel Point
2E + 1	1p3
2E + 2	1p6
All other bridges	1p4

2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

For 2E + 8 (w/7N1), 2E + 9 (w/7N1) and 2E + 10 (w/7N1), PROCEED TO STEP ⑥⑤.

For 2E + 11 (w/8N1), 2E + 12 (w/7N1) and 2E + 12 (w/8N1), PROCEED TO STEP ⑥⑥.

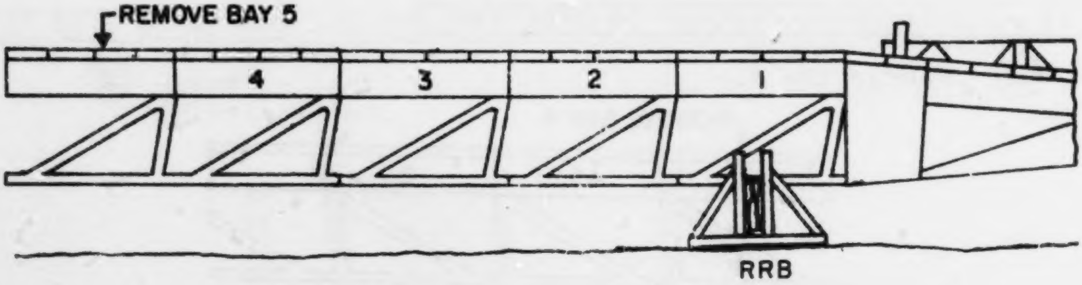
For 2E + 5 (w/6N1), 2E + 6 (w/6N1), 2E + 7 (w/6N1), 2E + 8 (w/6N1), 2E + 9 (w/6N1) and 2E + 10 (w/6N1), PROCEED TO STEP ⑦⓪.

For 2E + 4 (w/5N1), 2E + 5 (w/5N1), 2E + 6 (w/5N1), and 2E + 7 (w/5N1), PROCEED TO STEP ⑦②.

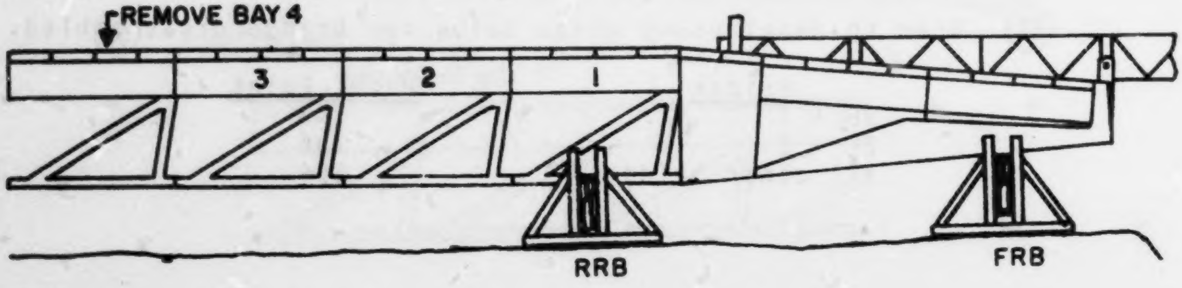
For 2E + 2, 2E + 3 and 2E + 4 (w/5N1), PROCEED TO STEP ⑦②.

For 2E + 1, PROCEED TO STEP ⑦③.

⑥④ Remove bay 5.



⑥⑤ Remove bay 4.



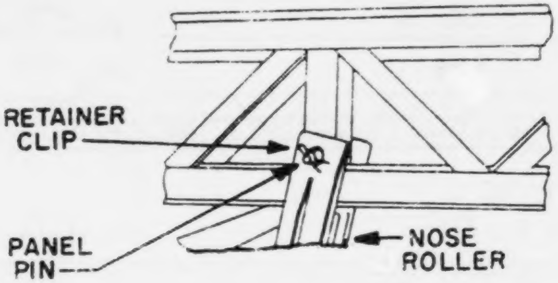
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

For 2E + 8 (w/7N1), 2E + 9 (w/7N1), 2E + 10 (w/7N1) and 2E + 11 (w/7N1), PROCEED TO STEP (69).

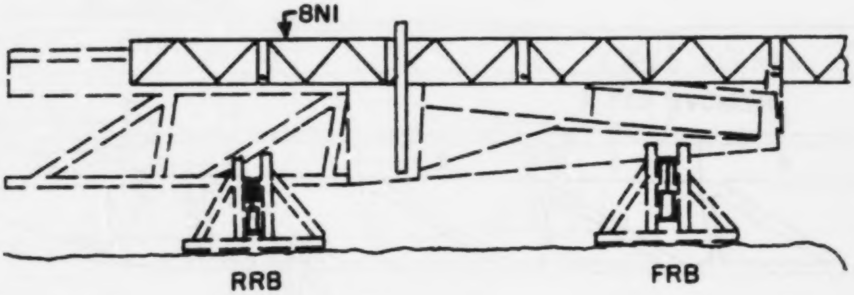
(66) Remove eighth nose section (8N1).

(a) Remove retainer clip from panel pin in nose roller and anchorage tube.

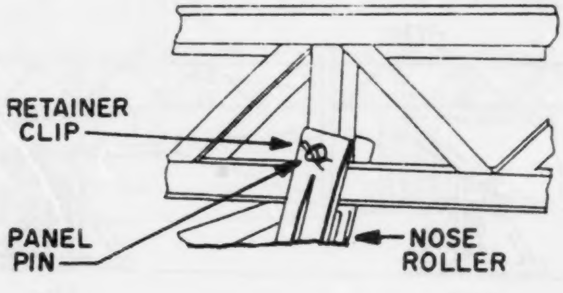
(b) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.



(c) Move launching nose to the rear until the next anchorage tube is slightly behind nose roller.



(d) Put panel pin through nose roller and anchorage tube.

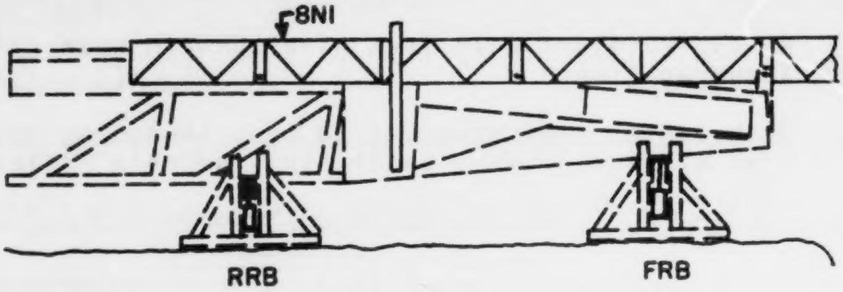


2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(e) Remove retainer clip and nose pin from last nose sectios.

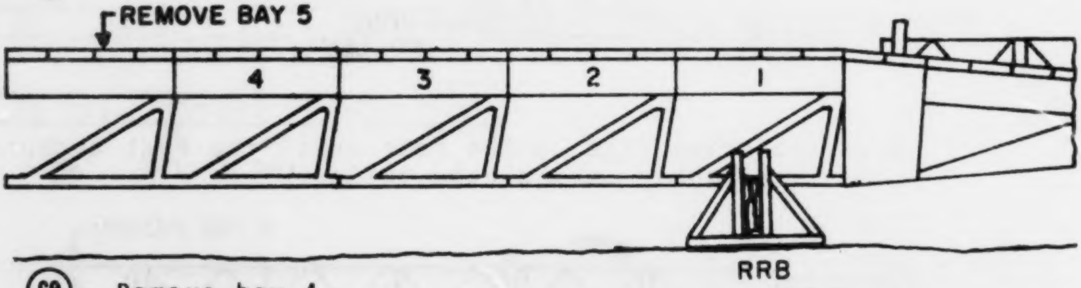
(f) Unlock shoot bolts in last nose section.

(g) Remove 8N1 nose section.

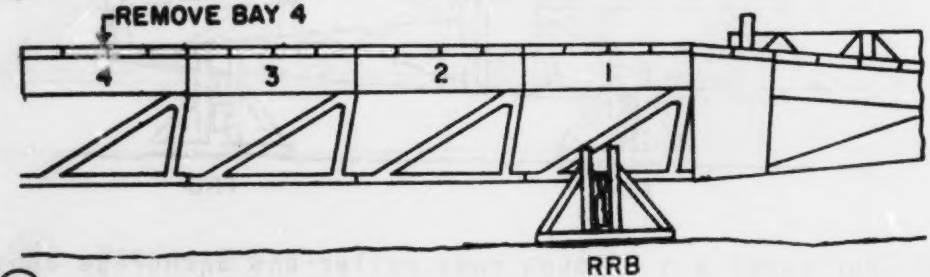


For 2E + 11 (w/8N1) and 2E + 12 (w/8N1), PROCEED TO STEP (68).

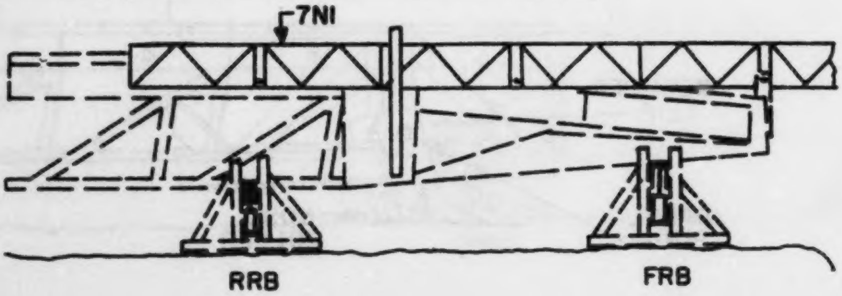
(67) Remove bay 5.



(68) Remove bay 4.

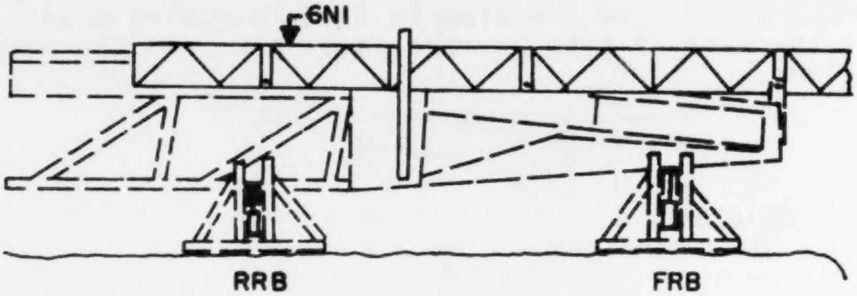


(69) Remove seventh nose section (7N1).

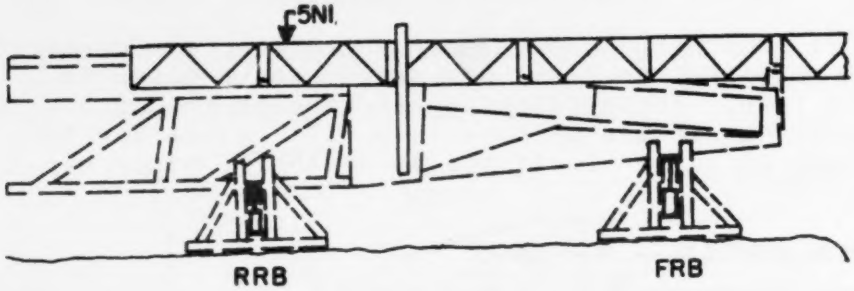


2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

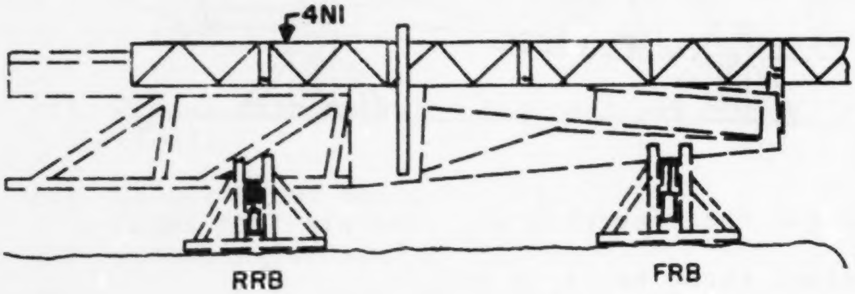
⑦⓪ Remove sixth nose section (6N1).



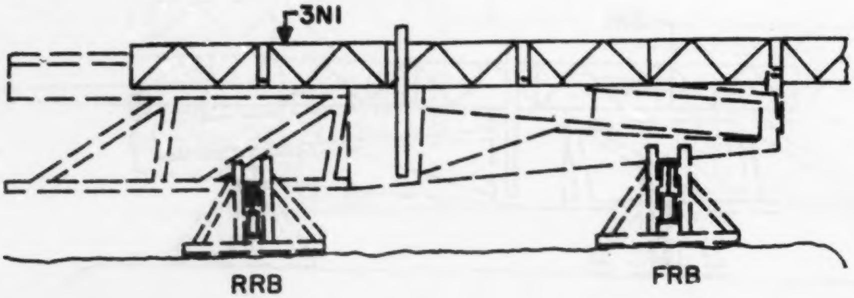
⑦① Remove fifth nose section (5N1).



⑦② Remove fourth nose section (4N1).



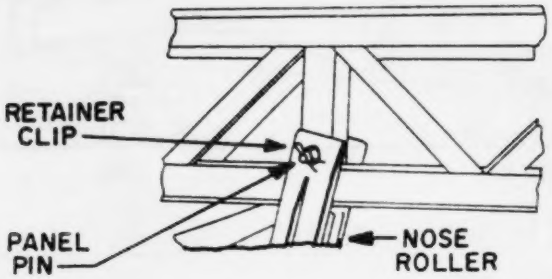
⑦③ Remove third nose section (3N1).



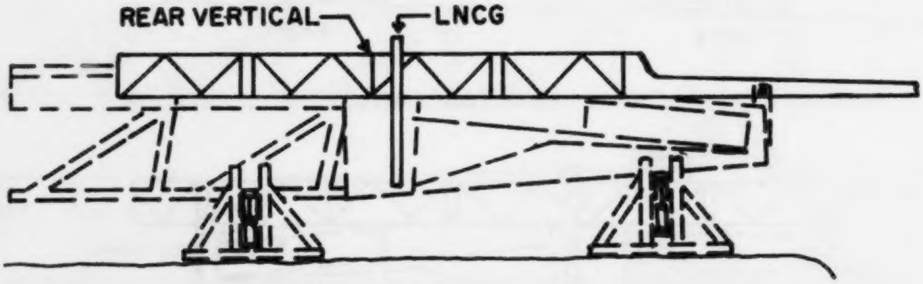
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

⑭ Remove second nose section (2N1).

(a) With center crew prepared to move launching nose to the rear of site, remove panel pin from the nose roller.



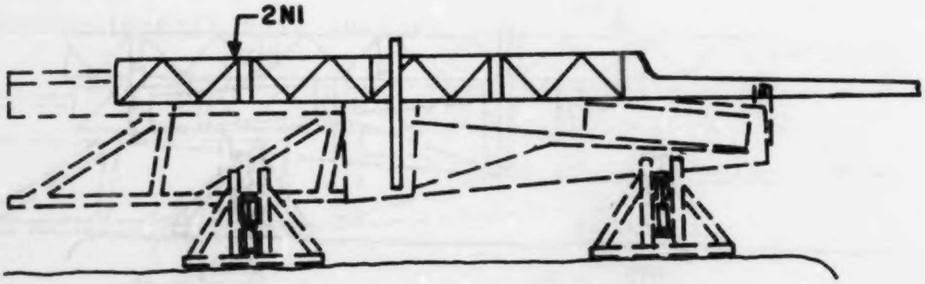
(b) Move launching nose to rear until the rear vertical of nose section (1N1) has passed the rollers in the LNCG. Put a carrying bar through the nose section. If tip of nose is uphill, place bar in front of rollers. If tip is downhill, place bar behind rollers.



(c) Remove retainer clip and nose pin from 2N1.

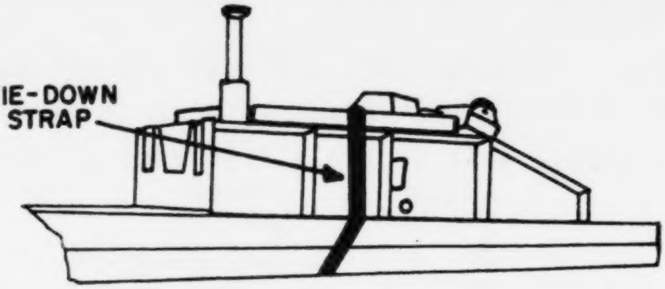
(d) Unlock shoot bolts in 2N1.

(e) Remove nose section 2N1.



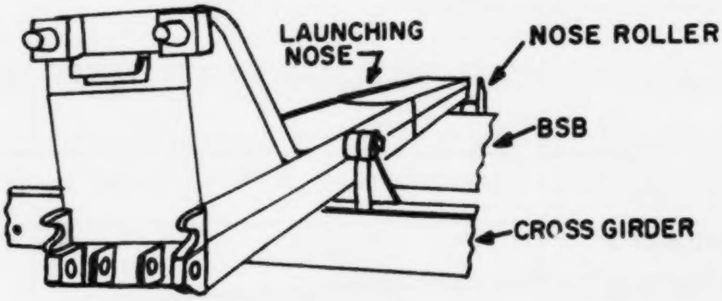
2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

(75) Remove LRP from tip of launching nose.



(76) Remove first nose section (1N1).

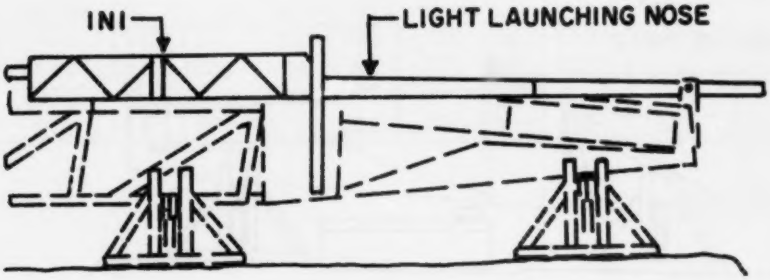
(a) Move launching nose toward rear of site. Stop movement when the rear of the light launching nose rear section is over the LNCG.



(b) Remove retainer clip and nose pin from nose section (1N1).

(c) Unlock shoot bolts in 1N1.

(d) Remove nose section (1N1).

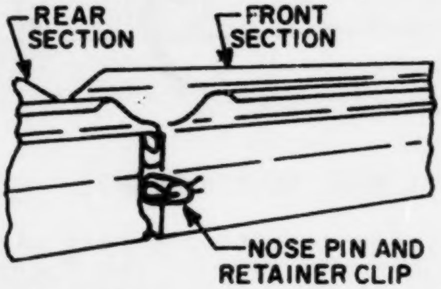


2-29. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Near Bank) (Cont).

⑦⑦ Remove light launching nose from nose roller and LNCG. Disassemble light launching nose on the ground behind LNCG.

(a) Remove retainer clip and nose pin between nose sections.

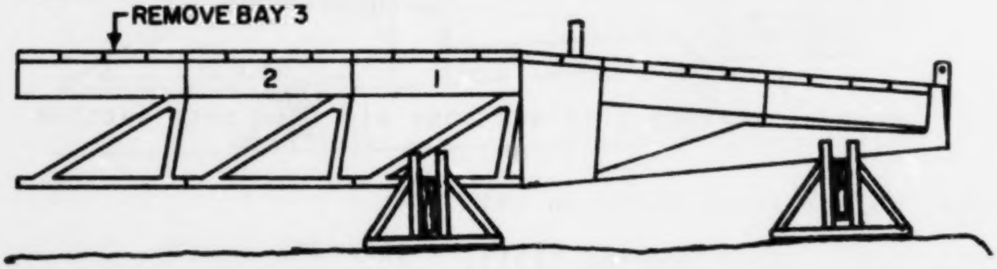
(b) Disengage nose sections from each other.



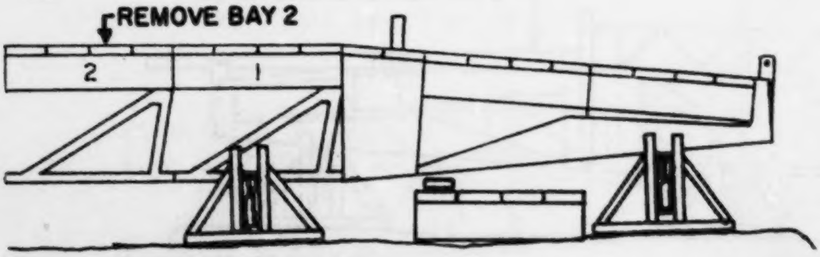
For 2E + 1, PROCEED TO STEP ⑧⓪.

For 2E + 2, 2E + 3, 2E + 4 (w/4N1&5N1), 2E + 5 (w/5N1&6N1) and 2E + 6 (w/6N1), PROCEED TO STEP ⑦⑨.

⑦⑧ Remove bay 3.



⑦⑨ Remove bay 2.



⑧⓪ Disassemble the RRB, bay 1, end of bridge and FRB. Clear site of all components.

2-30 DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank).

a. Paragraph 2-30 describes the step by step procedures for the disassembly of double story - 2E + 1 thru 2E + 12 bay bridges on restricted site - original far bank.

b. The disassembly procedures are basically the reverse of assembly, but there are differences, refer to Table 2-41. Because of these differences the user is advised to follow the step by step procedures carefully.

c. Once the user becomes familiar with the step by step procedures for disassembly, it will be possible to disassemble any double story - 2E + 1 thru 2E + 12 bay bridge using the De-launch Table 2-42.

d. This table provides the necessary instructions to disassemble and de-launch all bridges.

e. DO NOT TRY TO USE THIS TABLE UNTIL THE STEP BY STEP PROCEDURES HAVE BEEN PRACTICED A NUMBER OF TIMES.

Table 2-41. Required Steps Per Bridge Length.

2E + 1	2E + 2	2E + 3	2E + 4	
3N1	4N1	4N1	4N1	5N1
For all double story bridges - 2E + 1 thru 2E + 12 bay, perform steps 1.a.(1) thru 2.a.(9) in paragraph 2-26, then perform steps below for bridge being disassembled.				
(10) thru (18) (33) thru (35) (50) (62) thru (74)	(10) thru (19) (32) thru (35) (50) (61) thru (74)	(10) thru (19) (32) thru (35) (50) (61) thru (74)	(10) thru (19) (32) thru (36) (38) (50) (53) thru (74)	(10) thru (22) (32) thru (35) (50) (60) thru (74)

2E + 5		2E + 6	
5N1	6N1	5N1	6N1
For all double story bridges - 2E + 1 thru 2E + 12 bay, perform steps 1.a.(1) thru 2.a.(9) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(10) thru (19) (32) thru (38) (50) (62) thru (74)	(10) thru (25) (33) thru (35) (50) (59) thru (74)	(10) thru (19) (32) thru (41) (50) (60) thru (74)	(10) thru (28) (33) thru (35) (38) (59) thru (74)

2-30 DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank).(Cont).

Table 2-41. Required Steps Per Bridge Length (Cont).

2E + 7		2E + 8	
5N1	6N1	6N1	7N1
For all double story bridges - 2E + 1 thru 2E + 12 bay, perform steps 1.a.(1) thru 2.a.(9) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(10) thru (19)	(10) thru (25)	(10) thru (22)	(10) thru (28)
(32) thru (36)	(33) thru (35)	(32) thru (41)	(33) thru (35)
(38) thru (34)	(43) thru (52)	(50) thru (52)	(50) thru (52)
(50) thru (52)	(59) thru (74)	(59) thru (74)	(58) thru (74)
(60) thru (74)			

2E + 9		2E + 10	
6N1	7N1	6N1	7N1
For all double story bridges - 2E + 1 thru 2E + 12 bay, perform steps 1.a.(1) thru 2.a.(9) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(10) thru (19)	(10) thru (28)	(10) thru (19)	(10) thru (25)
(32) thru (44)	(33) thru (38)	(32) thru (36)	(33) thru (44)
(52) thru (54)	(50) thru (52)	(38) thru (54)	(50) thru (52)
(59) thru (74)	(58) thru (74)	(59) thru (74)	(58) thru (74)

2E + 11		2E + 12	
7N1	8N1	7N1	8N1
For all double story bridges - 2E + 1 thru 2E + 12 bay, perform steps 1.a.(1) thru 2.a.(9) in paragraph 2-26, then perform steps below for bridge being disassembled.			
(10) thru (22)	(10) thru (31)	(10) thru (19)	(10) thru (28)
(32) thru (44)	(33) thru (38)	(32) thru (56)	(33) thru (44)
(50) thru (56)	(50) thru (54)	(58) thru (74)	(50) thru (54)
(58) thru (74)	(57) thru (74)		(57) thru (74)

TABLE 2-42. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site - Original Far Bank).

Bridge ft Length m	37 11.3	43 13.1	49 14.9	55 16.8		61 18.6	
2E + No. of Bays	1	2	3	4		5	
Nose Construction	3N1	4N1	4N1	4N1	5N1	5N1	6N1
Build	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d
De-Launch To and Remove	1p4 BSB, ETP, TPF, and TPE	2p4 BSB, ETP, TPF, and TPE	3p4 BSB, ETP, TPF, and TPE	4p4 BSB, ETP, TPF, and TPE	4p4 BSB, ETP, TPF, and TPE	5p4 BSB, ETP, TPF, and TPE	5p4 BSB, ETP, TPF, and TPE
De-Launch To and Remove	Bp0 D	1p4 D and BP2	2p4 D and BP3	3p4 D and BP4	3p4 D and BP4	4p4 D and BP5	4p4 D and BP5
De-Launch To and Remove					Ap1 TP4 and BP3		1p7 TP5 and BP4
De-Launch To and Remove							Ap1 TP4 and BP3
De-Launch To and Add Under	RRB	Ap3 RRB	Ap3 RRB 3p1	1p6 RRB 4p2	RRB 3p3	1p4 RRB 4p0	RRB 3p3
De-Launch To and Recover	Cp1 LRP	Cp1 LRP	Bp5 LRP	Bp0 LRP	Bp7 LRP	Ap2 LRP	Cp2 LRP
Boom To and Remove (CG)				2p4 BP4		2p2 TP5 and TP4 (Bp3)	
Boom To and Remove (CG)	1p4 3N1 (Bp3)	1p7 4N1 (Bp0)	1p7 4N1 (Ap2)	1p7 4N1 (1p3)	1p4 5N1 (Ap2)	1p5 5N1 (1p3)	1p4 6N1 (1p3)
Boom To and Remove	1p7 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'
Boom To and Remove	1p4 RRB, BP1, TP1, E, and FRB	1p4 BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB

TABLE 2-42. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site - Original Far Bank) (Cont).

Bridge ft Length m	67 20.4		73 22.3		79 24.1		85 25.9	
2E + No. of Bays	6		7		8		9	
Nose Construction	5N1	6N1	5N1	6N1	6N1	7N1	6N1	7N1
Build	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d
De-Launch To and Remove	6p4 BSB, ETP, TPF, and TPE	6p4 BSB, ETP, TPF, and TPE	7p4 BSB, ETP, TPF, and TPE	7p4 BSB, ETP, TPF, and TPE	8p4 BSB, ETP, TPF, and TPE	8p4 BSB, ETP, TPF, and TPE	9p4 BSB, ETP, TPF, and TPE	9p4 BSB, ETP, TPF, and TPE
De-Launch To and Remove	5p4 D and BP6	5p4 D and BP6	6p4 D and BP7	6p4 D and BP7	7p4 D and BP8	7p4 D and BP8	8p4 D and BP9	8p4 D and BP9
De-Launch To and Remove		2p7 TP6 and BP5		3p7 TP7 and BP6	4p7 TP8 and BP7	4p7 TP8 and BP7		5p7 TP9 and BP8
De-Launch To and Remove		1p7 TP5 and BP4		2p7 TP6 and BP5		3p7 TP7 and BP6		4p7 TP8 and BP7
De-Launch To and Remove		Ap1 TP4 and BP3				2p7 TP6 and BP5		3p7 TP7 and BP6
De-Launch To and Add Under	2p0 RRB 4p4	RRB 3p3	3p0 RRB 5p4	RRB 4p0	2p2 RRB 4p6	RRB 5p3	3p3 RRB 5p7	RRB 6p3
De-Launch To and Recover	1p2 LRP	Cp2 LRP	1p6 LRP	Bp0 LRP	1p4 LRP	Bp3 LRP	2p5 LRP	Ap2 LRP
Boom To and Remove (CG)	2p6 TP6 and BP5 (1p0)		3p7 BP7 (1p5)		3p0 TP7 and BP6 (1p0)		4p0 TP9 and BP8 (1p6)	2p1 TP6 and BP5 (Bp3)
Boom To and Remove (CG)	2p2 TP5 and BP4 (1p6)		3p2 TP7 and BP6 (1p2)		2p4 TP6 and BP5 (Bp0)		3p4 TP8 and BP7 (1p2)	

TABLE 2-42. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site - Original Far Bank) (Cont).

Bridge ft Length m	67 20.4		73 22.3		79 24.1		85 25.9	
2E + No. of Bays	6		7		8		9	
Nose Construction	5N1	6N1	5N1	6N1	6N1	7N1	6N1	7N1
Boom To and Remove (CG)			2p2 TP6 and BP5 (Ap2)				3p0 TP7 and BP6 (Ap2)	
Boom To and Remove (CG)	1p7 5N1 (1p3)	1p4 6N1 (Ap2)	1p7 TP5, BP4, and 5N1 (1p3)	1p7 TP5, BP4, and 6N1 (1p3)	1p7 TP5, BP4, and 6N1 (1p3)	1p7 TP5, BP4, and 7N1 (1p3)	1p7 TP6, BP5, TP5, BP4, and 6N1 (1p3)	1p7 TP5, BP4, and 7N1 (1p3)
Boom To and Remove	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'
Boom To and Remove	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB

NOTES:
- a. Position FRB under RBSB.
- b. Position center of LR (in LRP) 9 ft (2.7 m) from BSB.
- c. Add 3 LNH. Reposition LRP [base 9 in (23 cm) from BSB].
- d. Add remaining nose sections.

TABLE 2-42. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site - Original Far Bank) (Cont).

Bridge ft Length m	91 27.7		97 29.6		103 31.4	
2E + No. of Bays	10		11		12	
Nose Construction	6N1	7N1	7N1	8N1	7N1	8N1
Build	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d	Notes a, b, c, and d
De-Launch To and Remove	10p4 BSB, ETP, TPF, and TPE	10p4 BSB, ETP, TPF, and TPE	11p4 BSB, ETP, TPF, and TPE	11p4 BSB, ETP, TPF, and TPE	12p4 BSB, ETP, TPF, and TPE	12p4 BSB, ETP, TPF, and TPE
De-Launch To and Remove	9p4 D and BP10	9p4 D and BP10	10p4 D and BP11	10p4 D and BP11	11p4 D and BP12	11p4 D and BP12
De-Launch To and Remove		6p7 TP10 and BP9	7p7 TP11 and BP10	7p7 TP11 and BP10		8p7 TP12 and BP11
De-Launch To and Remove		5p7 TP9 and BP8		6p7 TP10 and BP9		7p7 TP11 and BP10
De-Launch To and Remove				5p7 TP9 and BP8		6p7 TP10 and BP9
De-Launch To and Remove				4p7 TP8 and BP7		
De-Launch To and Add Under	4p3 RRB 6p7	RRB 8p3	3p5 RRB 6p1	RRB 7p3	4p5 RRB 7p1	RRB 9p3
De-Launch To and Recover	3p1 LRP	1p6 LRP	2p7 LRP	1p6 LRP	3p5 LRP	2p0 LRP
Boom To and Remove (CG)	5p1 BP10 (3p1)	3p2 TP8 and BP7 (1p2)	4p2 TP10 and BP9 (2p3)	2p3 TP7 and BP6 (Bp1)	5p3 TP12 and BP11 (3p3)	3p4 TP9 and BP8 (1p4)
Boom To and Remove (CG)	4p4 TP10 and BP9 (2p5)	2p6 TP7 and BP6 (Ap2)	3p6 TP9 and BP8 (1p6)		4p7 TP11 and BP10 (2p7)	3p0 TP8 and BP7 (1p0)

TABLE 2-42. DE-LAUNCH TABLE - 2E + 1 thru 2E + 12 Bay Double Story (Restricted Site -Original Far Bank) (Cont).

Bridge ft Length m	91 27.7		97 29.6		103 31.4	
2E + No. of Bays	10		11		12	
Nose Construction	6N1	7N1	7N1	8N1	7N1	8N1
Boom To and Remove (CG)	4p0 TP9 and BP8 (2p0)	2p1 TP6 and BP5 (Bp3)	2p6 TP8 and BP7 (1p2)		3p6 TP10 and BP9 (2p3)	2p3 TP7 and BP6 (Bp1)
Boom To and Remove (CG)	3p0 TP8, BP7, BP6 (1p0)				2p6 TP8 and BP7 (1p2)	
Boom To and Remove (CG)	1p7 TP6, BP5, TP5, BP4, and 6N1 (1p3)	1p7 TP5, BP4, and 7N1 (1p3)	1p7 TP7, BP6, TP6, BP5, TP5, BP4, and 7N1 (1p3)	1p7 TP6, BP5, TP5, BP4, and 8N1 (1p3)	1p7 TP7, BP6, TP6, BP5, TP5, BP4, and 7N1 (1p3)	1p7 TP6, BP5, TP5, BP4, and 8N1 (1p3)
Boom To and Remove	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'	2p0 Pin at 'A'
Boom To and Remove	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB	1p4 TP4, BP3, TP3, BP2, RRB, TP2, BP1, TP1, E, and FRB

NOTES:
- a. Position FRB under RBSB.
- b. Position center of LR (in LRP) 9 ft (2.7 m) from BSB.
- c. Add 3 LNH. Reposition LRP [base 9 in (23 cm) from BSB].
- d. Add remaining nose sections.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

a. This paragraph provides the additional or modified steps needed to disassemble the MGB on the original far bank.

b. This paragraph must be used with paragraph 2-26.

NOTE

The original far bank becomes the new near bank, and the original near bank becomes the new far bank. Also the bays of bridge must be renumbered from the new far bank. Using a 2E + 12 bay as an example, what was bay 12 is now bay 1, and what was bay 1 is now bay 12.

c. All reference to near or far bank from this point will be referring to the new near bank and the new far bank.

NOTE

Move all launching nose components to the far bank, and all the roller beam components to near bank. All pallets must be moved to near bank.

For all double story bridges - 2E + 1 thru 2E + 12 bay, proceed to paragraph 2-26. Perform steps 1.a.(1) thru 2.a.(9), then proceed to procedures below.

NOTE

If bridge had been emplaced with minimum bearing under the original far bank end of bridge, it will have to be "skidded". "Skidding" a bridge is a procedure used to get enough bridge [4.5 ft (1.4 m)] over the bank so the front roller beam can be put under it safely.

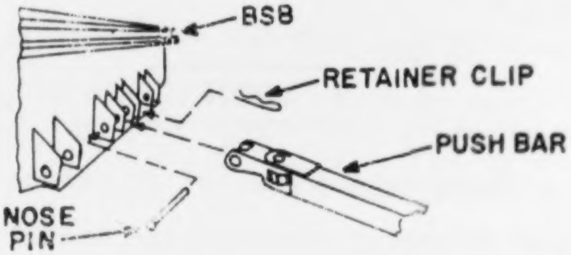
⑩ To "skid" the bridge.

NOTE

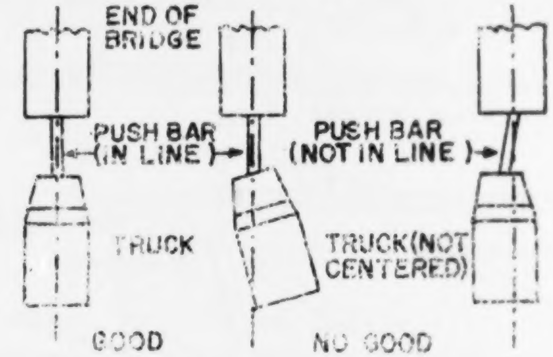
If the end of bridge has sunk into the ground, it will be necessary to jack up the end of bridge so packing can be placed under the ETP.

(a) Pin short push bar to center bracket of bankseat beam with nose pin. Secure nose pin with retainer clip.

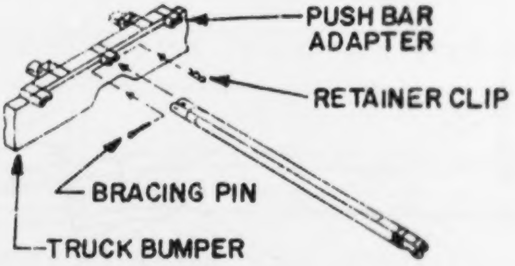
2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).



(b) Move vehicle into position near rear of bridge. Ensure that vehicle is in a straight line with the bridge and centered over the centerline.



(c) Pin push bar to adapter with bracing pin and secure with retainer clip.



(d) Back vehicle up, "skidding" bridge over ground (or packing) until 4.5 ft (1.4 m) of the end of bridge is over the bank. Stop "skidding".

(e) Remove push bar and back vehicle off the site.

⑪ To raise bridge and position FRB under the bankseat beam, proceed to paragraph 2-26 and perform steps 2.a.(10) thru (12).

⑬ Assemble launching nose.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

⑭ Using LRP, raise bridge off ground until jack is fully extended.

NOTE

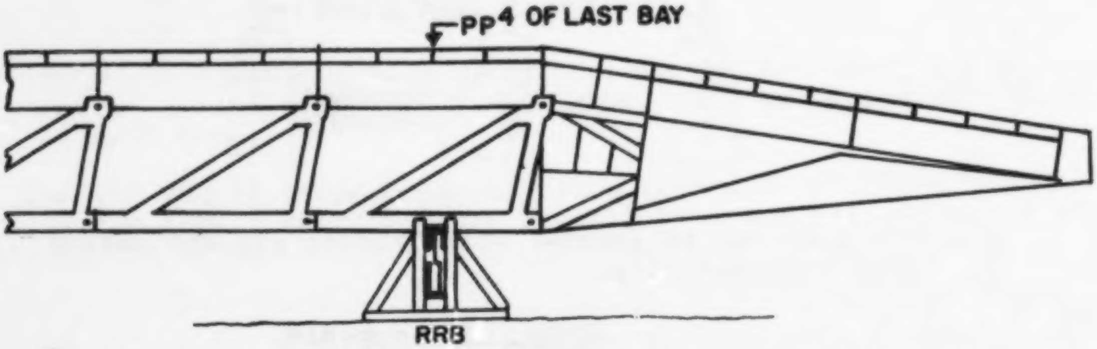
Vehicle is holding bridge and roller catches in FRB are locked.

⑮ De-launch bridge to panel point 4 of the last bay of bridge.

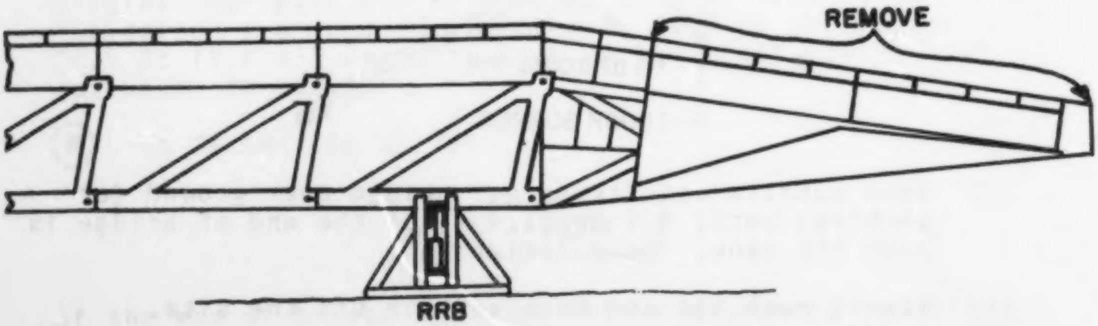
(a) Unlock roller catches on FRB.

(b) De-launch bridge until panel point 4 of last bay of bridge is over FRB.

(c) Stop de-launch and lock roller catches in FRB. Disconnect vehicle from bridge.



⑯ Disassemble the end of bridge (except for the junction panel).



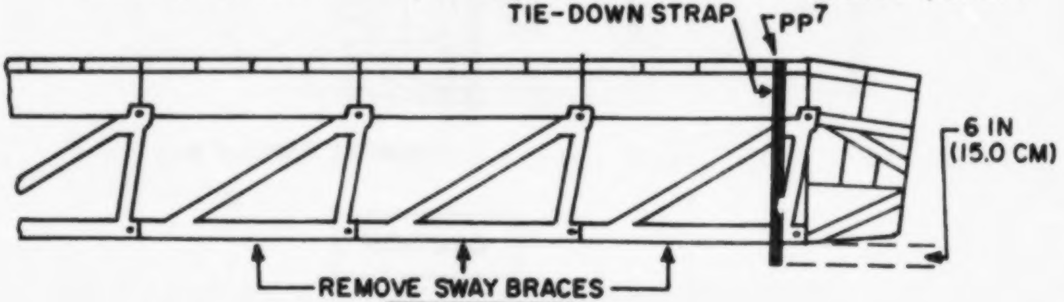
⑰ De-launch bridge 8 panel points (BpO for 2E + 1, pp4 of the next bay for all other bridges).

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

⑱ Removing junction panel.

(a) Remove sway brace in the last bay of bridge.

(b) Place one 10,000 lb cargo tie-down strap around panel point 7 of the last bay. This strap must be adjusted so as to provide 6 in (15 cm) of slack below bottom panel.

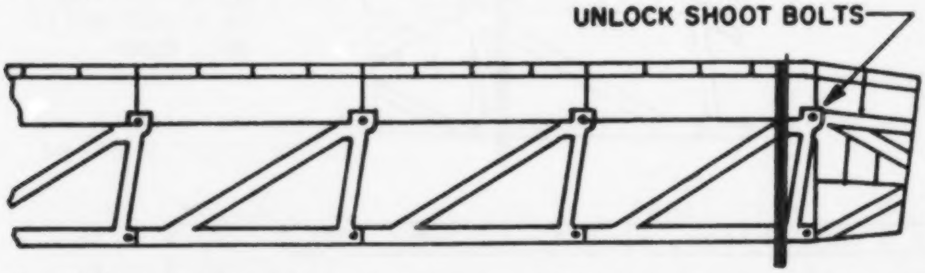


NOTE

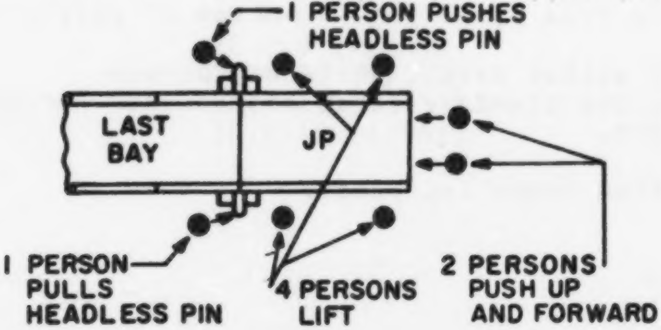
Placement of this tie-down strap will hold the bottom panel up during removal of the junction panel. This strap reduces the chances of injuring personnel and damaging the panel.

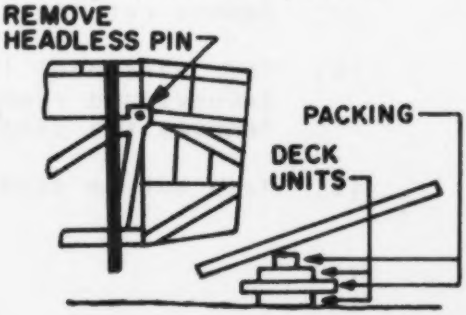
(c) Remove retainer clips from headless pin in junction panel.

(d) Unlock shoot bolts of bottom panel in last bay of bridge.



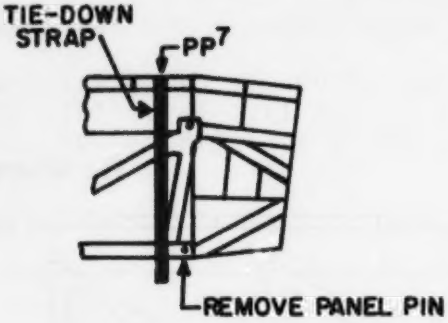
(e) Using deck units as shown, lift junction panel and remove headless pin from upper pin hole in junction panel.


1 PERSON PUSHES HEADLESS PIN
LAST BAY
JP
1 PERSON PULLS HEADLESS PIN
4 PERSONS LIFT
2 PERSONS PUSH UP AND FORWARD



2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

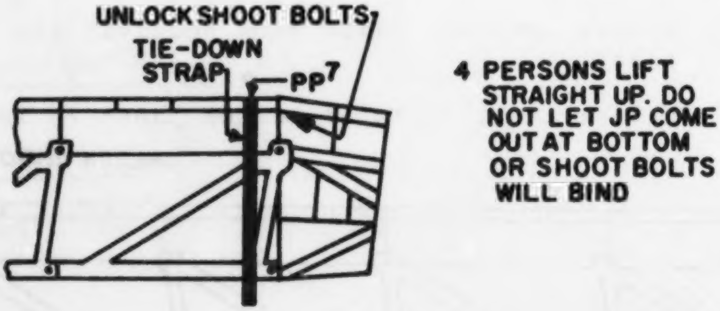
(f) Remove panel pin from bottom pin hole in junction panel.



CAUTION

Bottom panel will drop into strap as junction panel is removed. Keep feet and legs clear of bottom panel.

(g) Four personnel lift junction panel and unlock shoot bolts. Remove junction panel from the end of bridge.


UNLOCK SHOOT BOLTS
TIE-DOWN STRAP
PP7
4 PERSONS LIFT STRAIGHT UP. DO NOT LET JP COME OUT AT BOTTOM OR SHOOT BOLTS WILL BIND

For 2E + 1 bay bridge, PROCEED TO STEP (30).

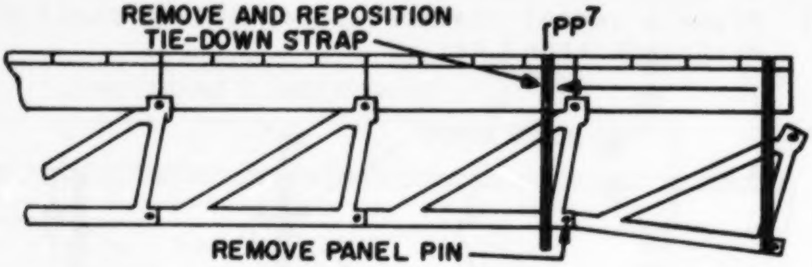
(19) Remove bottom panel in the last bay of bridge.

(a) Remove retainer clip from panel pin in bottom of panel.

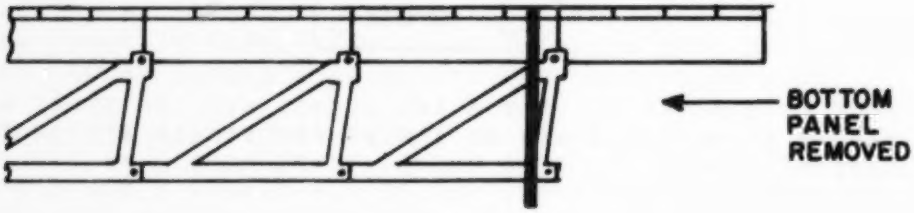
(b) Four personnel lift bottom panel, while one person unhooks and removes the tie-down strap and another person removes the panel pin.

(c) Move bottom panel from under top panel.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).



(d) Tie-down strap is hooked around panel point 7 of the next unstrapped bay.



For 2E + 2, 2E + 3, 2E + 4 (w/4N1), 2E + 5 (w/5N1), 2E + 6 (w/5N1), 2E + 7 (w/5N1), 2E + 9 (w/6N1), 2E + 10 (w/6N1), and 2E + 12 (w/7N1),

PROCEED TO STEP ㉙.

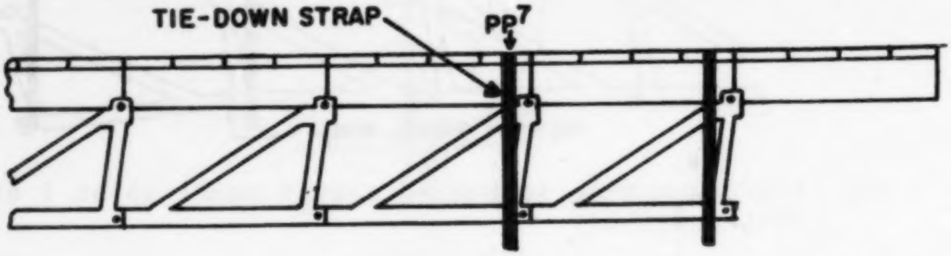
⑳ De-launch bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over FRB)
2E + 4 (w/5N1)	Ap1
2E + 5 (w/6N1)	1p7
2E + 6 (w/6N1)	2p7
2E + 7 (w/6N1)	3p7
2E + 8 (w/6N1&7N1)	4p7
2E + 9 (w/7N1)	5p7
2E + 10 (w/7N1)	6p7
2E + 11 (w/7N1&8N1)	7p7
2E + 12 (w/8N1)	8p7

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

㉑ Remove last top panel.

(a) Place a second tie-down strap around panel point 7 of the next unstrapped bay.

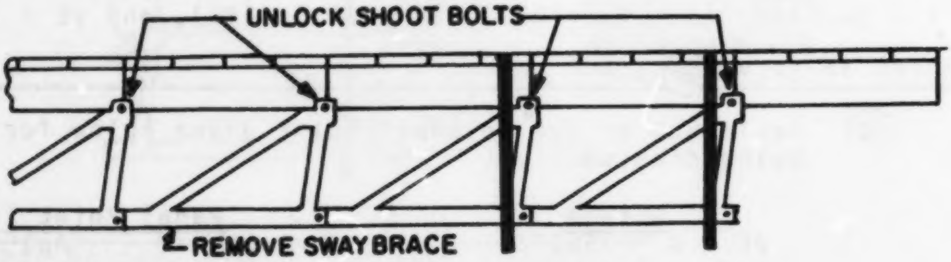


NOTE

From this point on, these two straps will be moved along the bridge girder so there is always two straps around the last two bays of bridge.

(b) Remove retainer clip from panel pin in last top panel.

(c) Unlock shoot bolts of the last four bottom panels in each side of bridge.



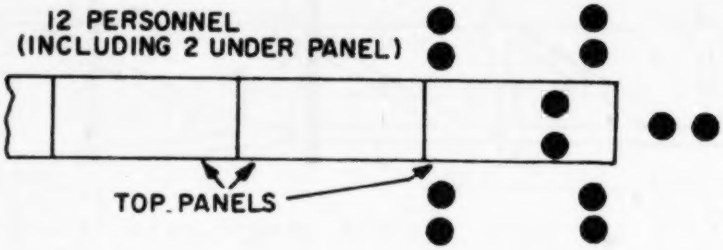
NOTE

It is necessary to unlock four shoot bolts so as to provide enough slack in the girder to permit releasing the bottom panel upper jaws from the panel pin in the rearmost top panel. Ensure that four shoot bolts are unlocked before trying to lift the rearmost top panel.

(d) Remove the next sway brace in the bridge.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

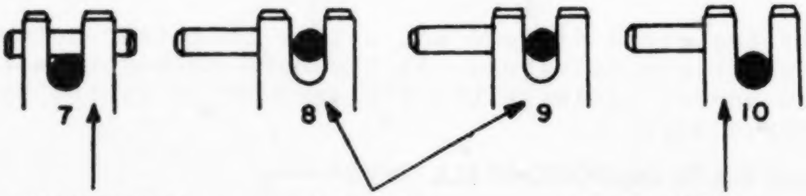
(e) Using 12 personnel as shown, lift rearmost top panel until bottom panel falls free of panel pin in top panel.



NOTE

The panel pins in the upper jaws may not settle back down after the top panel is lifted (as shown in example). If this happens, it will not be possible to unlock the next shoot bolt.

To unlock the next shoot bolt (bay 7), temporarily lock the shoot bolt in bottom panel 10 and lift top panel 11 until the pins in 9 and 8 resettle. Unlock shoot bolts in bays 10 and 7.



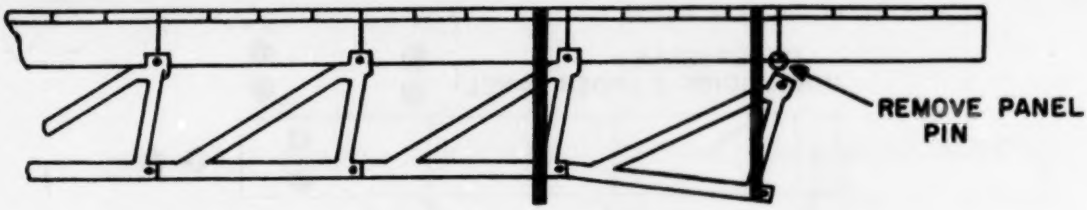
This shoot bolt will not unlock.

Did not settle back down in upper jaws.

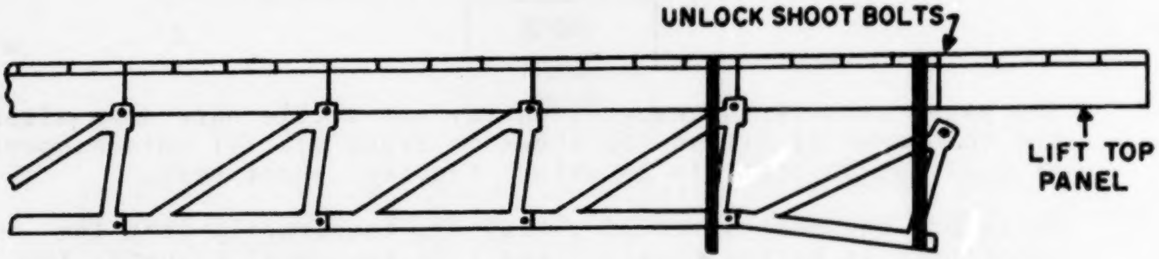
Temporarily lock this bolt and lift top panel 11 to get pins resettled.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

(f) Let top panel down and remove panel pin.

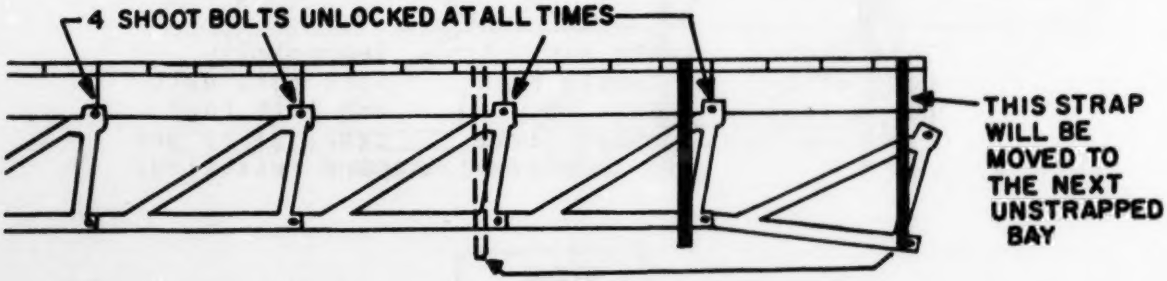


(g) Lift top panel, unlock shoot bolts in top panel and remove panel.

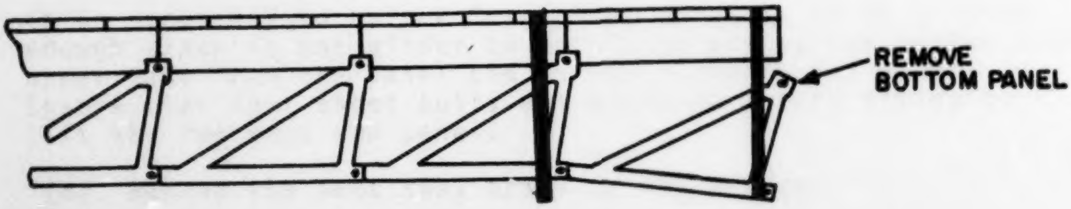


NOTE

As this top panel is removed, ensure that four bottom panel shoot bolts are unlocked. As the next next bottom panel is removed unhook and move the tie-down strap to the next unstrapped bay.


4 SHOOT BOLTS UNLOCKED AT ALL TIMES
THIS STRAP WILL BE MOVED TO THE NEXT UNSTRAPPED BAY

㉒ Remove bottom panel of the next bay.



2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

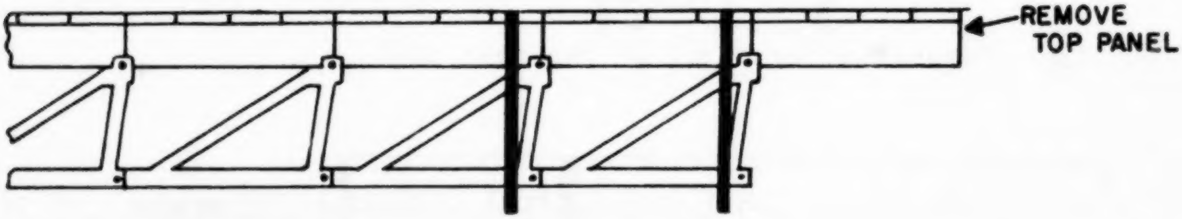
For 2E + 8 (w/6N1) and 2E + 11 (w/7N1), PROCEED TO STEP ㉜.

For 2E + 4 (w/5N1), PROCEED TO STEP ㉝.

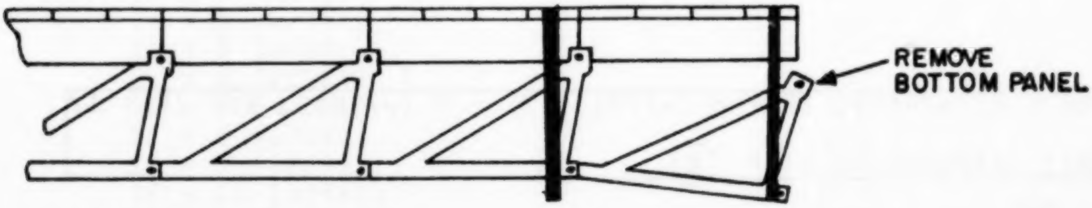
㉓ De-launch bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over FRB)
2E + 5 (w/6N1)	Ap1
2E + 6 (w/6N1)	1p7
2E + 7 (w/6N1)	2p7
2E + 8 (w/7N1)	3p7
2E + 9 (w/7N1)	4p7
2E + 10 (w/7N1)	5p7
2E + 11 (w/8N1)	6p7
2E + 12 (w/8N1)	7p7

㉔ Remove rearmost top panel.



㉕ Remove bottom panel of the next bay.



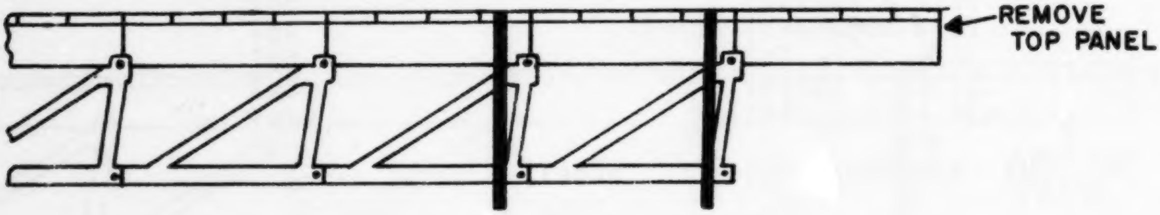
For 2E + 5 (w/6N1), 2E + 7 (w/6N1), and 2E + 10 (w/7N1), PROCEED TO STEP ㉝.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

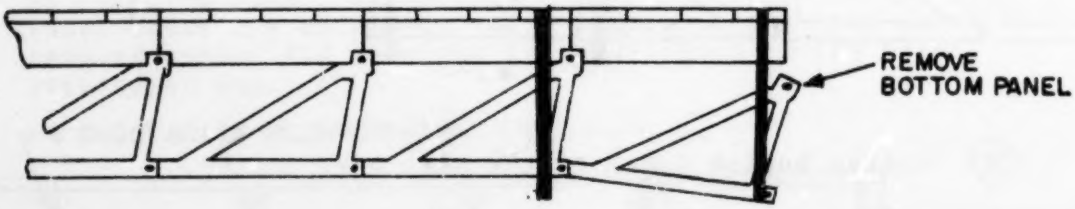
㉖ De-launch bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over FRB)
2E + 6 (w/6N1)	Ap1
2E + 8 (w/7N1)	2p7
2E + 9 (w/7N1)	4p7
2E + 11 (w/8N1)	5p7
2E + 12 (w/8N1)	6p7

㉗ Remove rearmost top panel.



㉘ Remove bottom panel of the next bay.



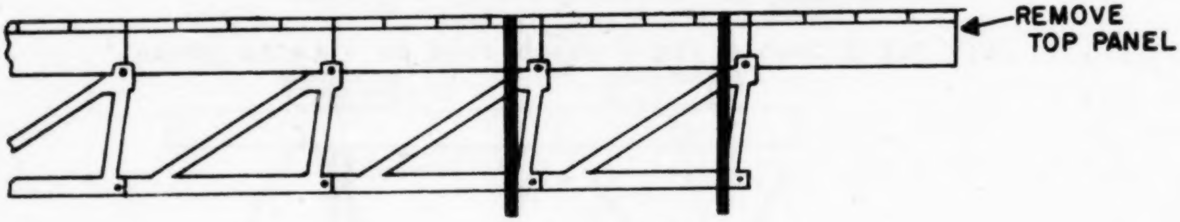
For 2E + 6 (w/6N1), 2E + 8 (w/7N1), 2E + 9 (w/7N1), and 2E + 12 (w/8N1), PROCEED TO STEP ㉝.

㉙ De-launch bridge to panel point given below for bridge being disassembled.

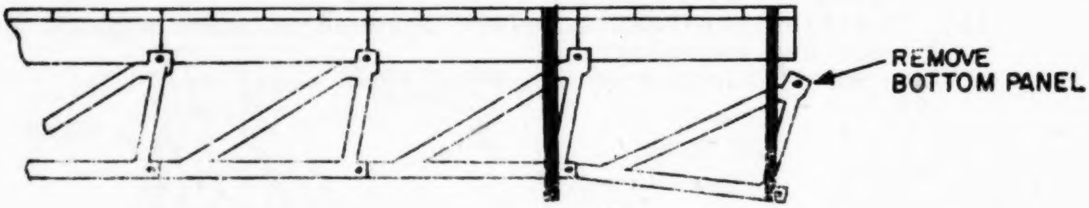
Bridge	Panel Point (over FRB)
2E + 11 (w/8N1)	4p7

㉚ Remove rearmost top panel.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).



(31) Remove bottom panel of the next bay.



For 2E + 11 (w/8N1), PROCEED TO STEP (33).

(32) De-launch bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over FRB)
2E + 2 and 2E + 3	Ap3
2E + 4 (w/4N1)	1p6
2E + 5 (w/5N1)	1p4
2E + 6 (w/5N1)	2p0
2E + 7 (w/5N1)	3p0
2E + 8 (w/6N1)	2p2
2E + 9 (w/6N1)	3p3
2E + 10 (w/6N1)	4p3
2E + 11 (w/7N1)	3p5
2E + 12 (w/7N1)	4p5

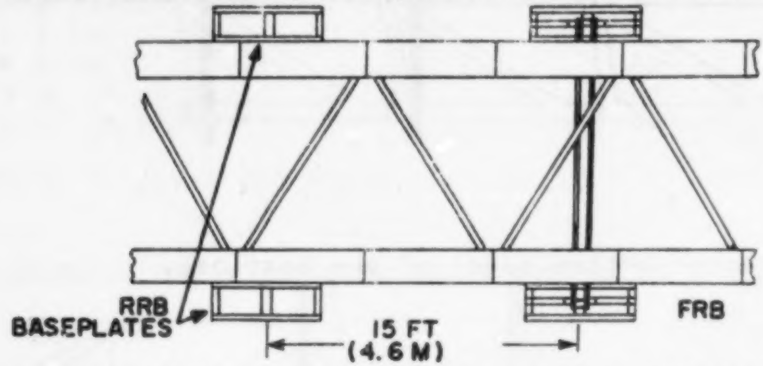
NOTE

Do not disconnect vehicle.

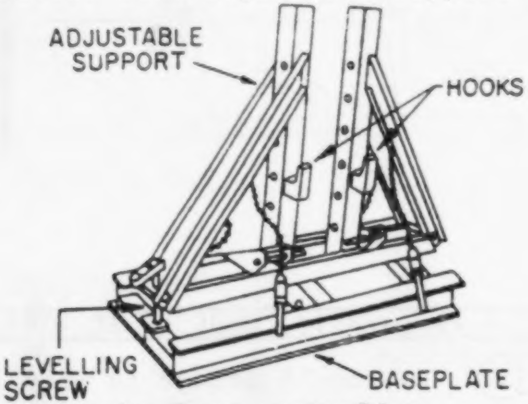
2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

㉝ Assemble and position the rear roller beam (RRB) over the centerline 15 ft (4.6 m) from the FRB.

(a) Put 2 double story baseplates on site as shown.

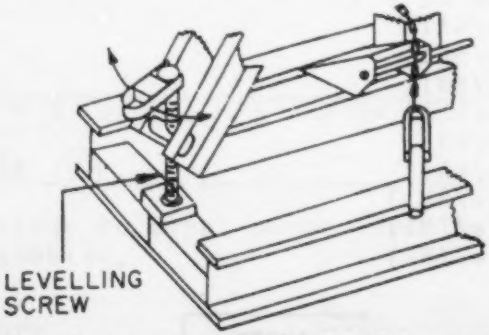


(b) Position and hold a roller beam adjustable support on each RRB baseplate.



(c) Ensure that hooks on supports face centerline.

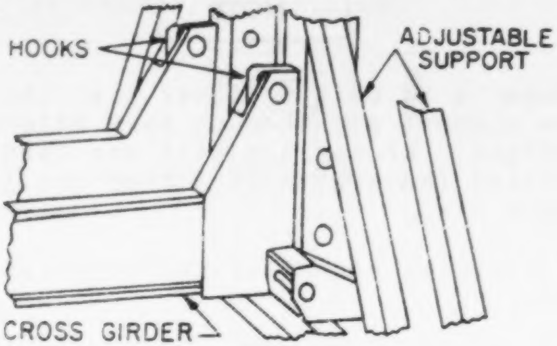
(d) Seat levelling screws in holes of baseplate.



(e) Turn the front or rear adjustable support levelling screws into the baseplate sockets so that adjustable support is vertical. Allow 1/4 in (6 mm) space between screw and socket so that the support may rock back and forth on the pivot (front to rear).

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

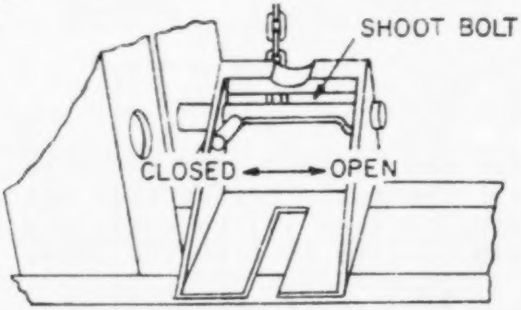
(f) Hook a building frame cross girder on adjustable supports for RRB.



NOTE

One of the supports may have to be moved slightly so both ends of the cross girder can be attached.

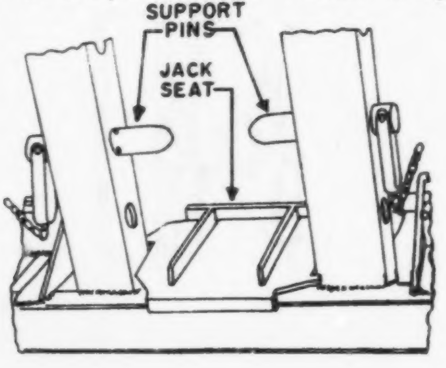
(g) Push shoot bolts through each cross girder and support bracket.



(h) Place a jack seat over support pins or lower rail in each adjustable support.

(i) Curved cut-outs fit over pins or rail in bottom of support.

(j) Open end of U-shaped ridge faces away from centerline.

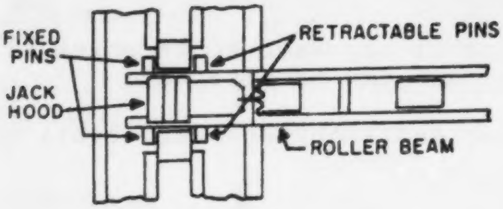


2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

NOTE

If roller beam is to be set higher than the lowest setting, push captive support pin through each adjustable support post at proper height. If support pins are used, ensure that they are fully seated (pushed in) and that the jack seat is fully seated on each pin.

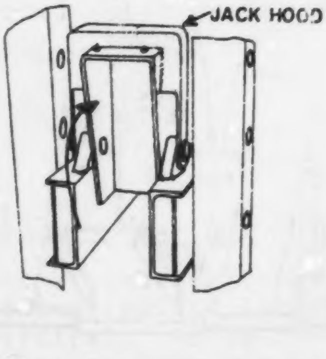
(k) Place a roller beam into the adjustable supports of the RRB.



(l) Roller beam can be slid into supports from the side or put in over the top. Ensure that retractable pins are fully seated (pushed in) to clear the supports if the roller beam is slid in from the side.

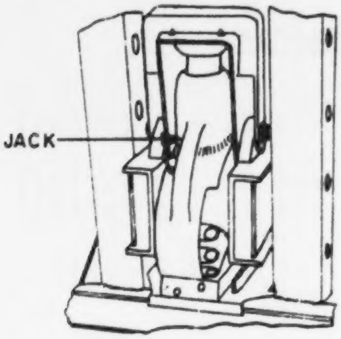
(m) Ensure that the retractable pins are pushed out to lock beam into supports once fixed pins are butted against posts of support.

(n) Raise jack hood on each end of roller beam.



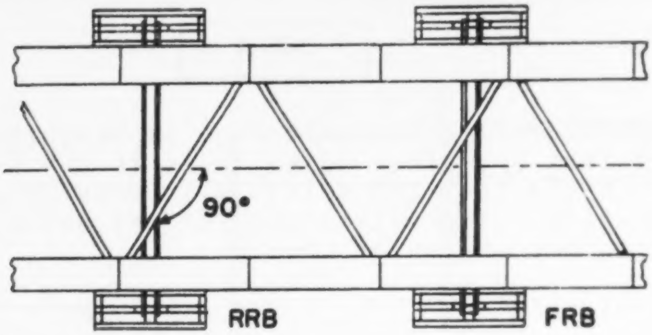
2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

(o) Position a jack on each jack seat and operate jack to raise roller beam 1/2 in (13 mm).



(p) Lock roller catches.

(q) Ensure that the center of RRB is over centerline of bridge. If it is not, pull on baseplates until center of RRB is directly over RRB peg. Ensure that RRB is at right angle (90°) to centerline of bridge.



(r) Position the roller beam at the height desired for de-launch. During this positioning, level the roller beam using a carpenters level.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

㉞ De-launch until panel point given below for bridge being disassembled.

Bridge	Panel Point
2E + 1 and 2E + 2	Cp1
2E + 3	Bp5
2E + 4 (w/4N1) and 2E + 7 (w/6N1)	Bp0
2E + 4 (w/5N1)	Bp7
2E + 5 (w/5N1) and 2E + 9 (w/7N1)	Ap2
2E + 5 (w/6N1) and 2E + 6 (w/6N1)	Cp2
2E + 6 (w/5N1)	1p2
2E + 7 (w/5N1), 2E + 10 (w/7N1) and 2E + 11 (w/8N1)	1p6
2E + 8 (w/6N1)	1p4
2E + 8 (w/7N1)	Bp3
2E + 9 (w/6N1)	2p5
2E + 10 (w/6N1)	3p1
2E + 11 (w/7N1)	2p7
2E + 12 (w/7N1)	3p5
2E + 12 (w/8N1)	2p0

NOTE

The center of gravity of the bridge is over the FRB. It is at this point that any minor adjustments in the RRB placement must be made. Ensure that the bridge will come to rest on the roller beams correctly. The bridge should rest between the flanges of the rollers, not on top of them.

㉟ Recover LRP.

For 2E + 1,2E + 2, 2E + 3, 2E + 4 (w/5N1), 2E + 5 (w/6N1), 2E + 6 (w/6N1), 2E + 7 (w/6N1), and 2E + 8 (w/7N1), PROCEED TO STEP ㊿.

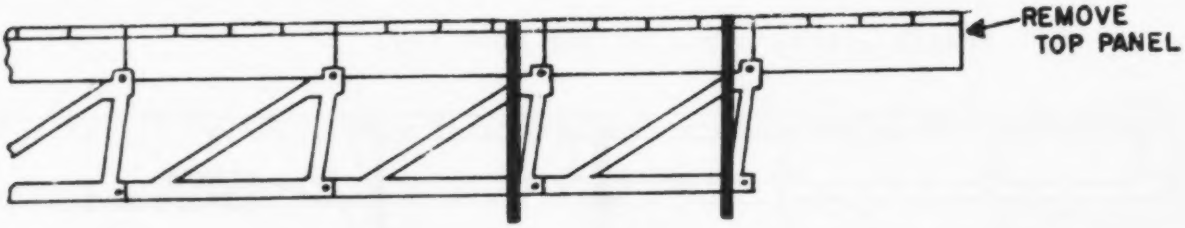
2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

㊱ Boom bridge to panel point given below for bridge being disassembled.

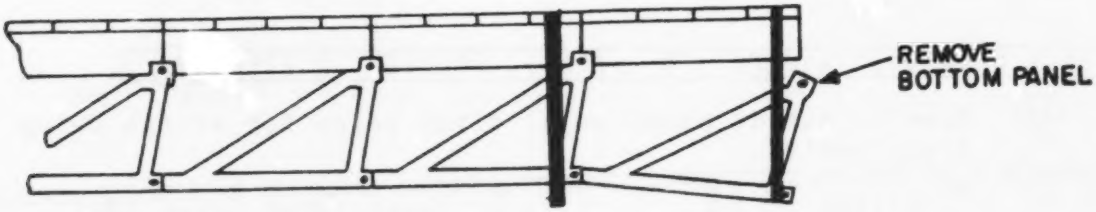
Bridge	Panel Point (over RRB)
2E + 4 (w/4N1)	2p4
2E + 5 (w/5N1)	2p2
2E + 6 (w/5N1)	2p6
2E + 7 (w/5N1)	3p7
2E + 8 (w/6N1)	3p0
2E + 9 (w/6N1)	4p0
2E + 9 (w/7N1)	2p1
2E + 10 (w/6N1)	5p1
2E + 10 (w/7N1)	3p2
2E + 11 (w/7N1)	4p2
2E + 11 (w/8N1)	2p3
2E + 12 (w/7N1)	5p3
2E + 12 (w/8N1)	3p4

For 2E + 4 (w/4N1), 2E + 7 (w/5N1) and 2E + 10 (w/6N1), PROCEED TO STEP ㊳.

㊲ Remove rearmost top panel.



㊳ Remove bottom panel of the next bay.



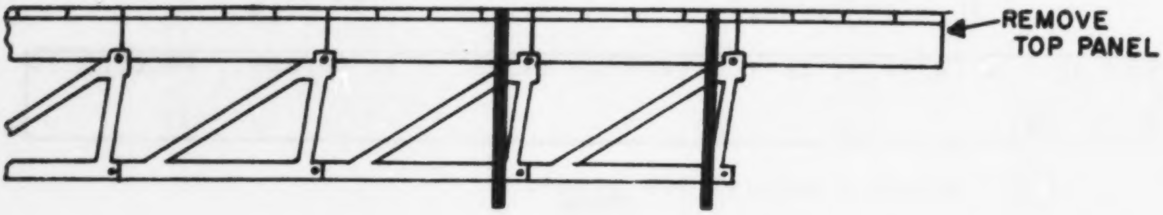
For 2E + 5 (w/5N1), 2E + 9 (w/7N1) and 2E + 11 (w/8N1), PROCEED TO STEP ㊿.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

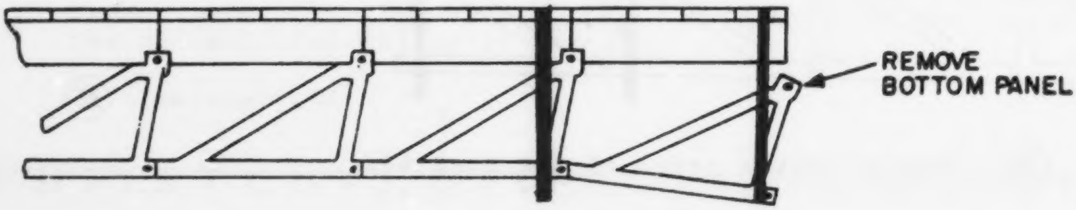
㊴ Boom bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over RRB)
2E + 6 (w/5N1)	2p2
2E + 7 (w/5N1)	3p2
2E + 8 (w/6N1)	2p4
2E + 9 (w/6N1)	3p4
2E + 10 (w/6N1)	4p4
2E + 10 (w/7N1)	2p6
2E + 11 (w/7N1)	3p6
2E + 12 (w/7N1)	4p7
2E + 12 (w/8N1)	3p0

㊵ Remove rearmost top panel.



㊶ Remove bottom panel of the next bay.



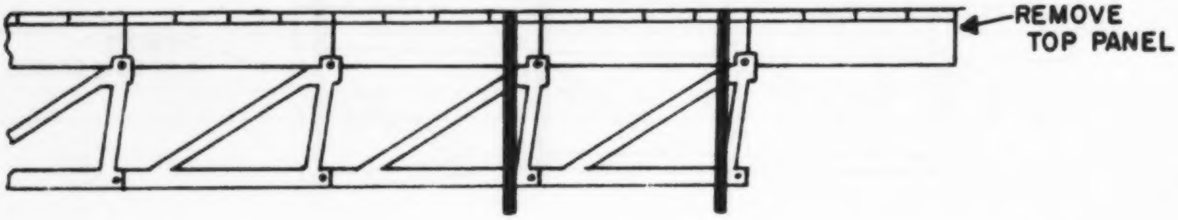
For 2E + 6 (w/5N1) and 2E + 8 (w/6N1), PROCEED TO STEP ㊿.

㊷ Boom bridge to panel point given below for bridge being disassembled.

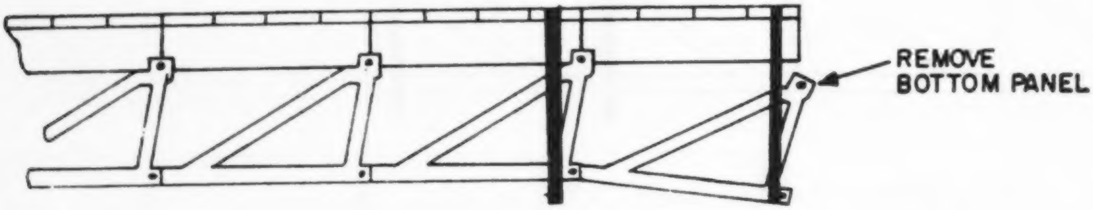
Bridge	Panel Point (over RRB)
2E + 7 (w/5N1)	2p2
2E + 9 (w/6N1)	3p0
2E + 10 (w/6N1)	4p0
2E + 10 (w/7N1)	2p1
2E + 11 (w/7N1)	2p6
2E + 12 (w/7N1)	3p6
2E + 12 (w/8N1)	2p3

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

(43) Remove rearmost top panel.



(44) Remove bottom panel of the next bay.

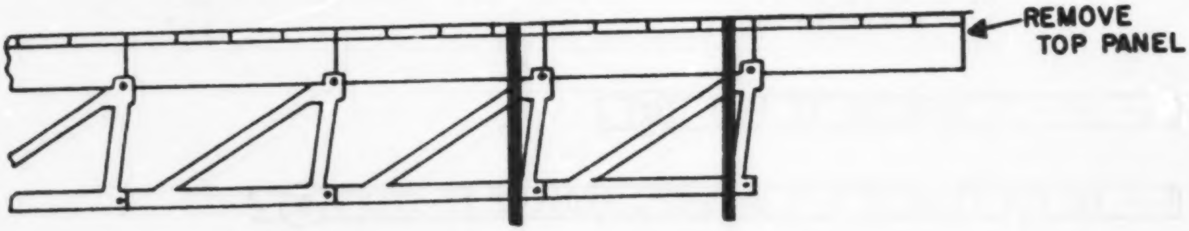


For 2E + 7 (w/5N1), 2E + 9 (w/6N1), 2E + 10 (w/7N1), 2E + 11 (w/7N1) and 2E + 12 (w/8N1), PROCEED TO STEP (50).

(45) Boom bridge to panel point given below for bridge being disassembled.

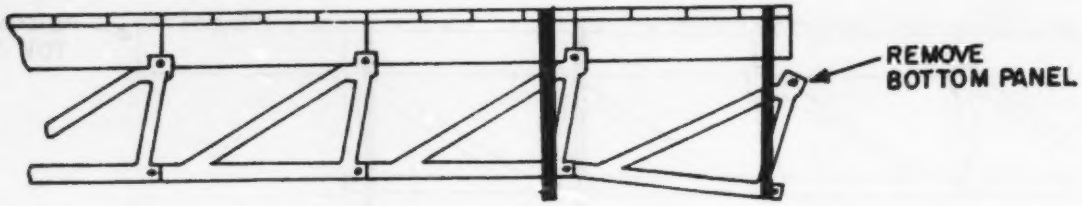
Bridge	Panel Point (over RRB)
2E + 10 (w/6N1)	3p0
2E + 12 (w/7N1)	2p6

(46) Remove rearmost top panel.

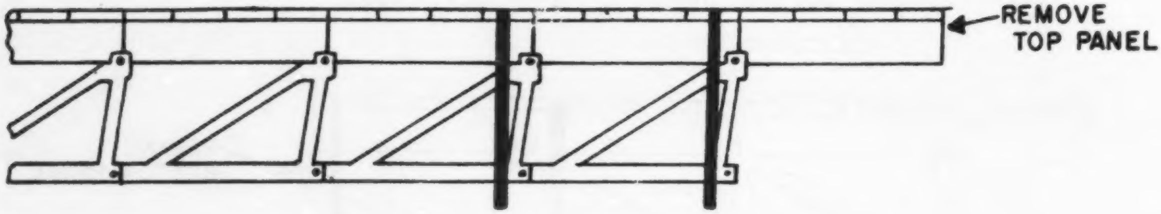


2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

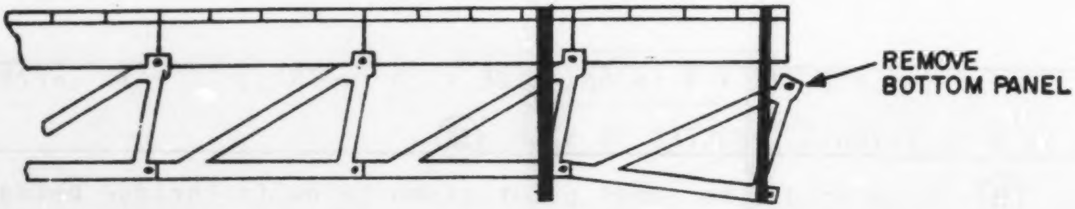
(47) Remove bottom panel of the next bay.



(48) Remove rearmost top panel.



(49) Remove bottom panel of the next bay.



(50) Boom bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over RRB)
2E + 1, 2E + 4 (w/5N1), 2E + 5 (w/6N1) and 2E + 6 (w/6N1)	1p4
2E + 5 (w/5N1)	1p5
All other bridges	1p7

For 2E + 1, PROCEED TO STEP (62).

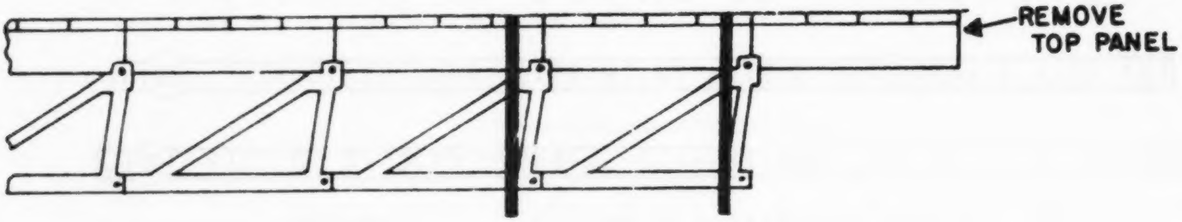
For 2E + 2 thru 2E + 4 (w/4N1), PROCEED TO STEP (61).

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

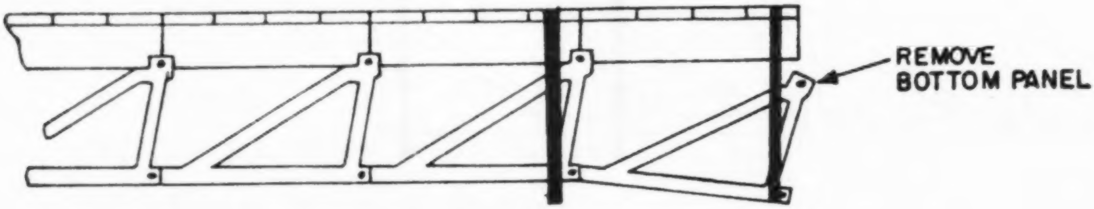
For 2E + 4 (w/5N1), 2E + 5 (w/5N1), and 2E + 6 (w/5N1), PROCEED TO STEP (60).

For 2E + 5 (w/6N1) and 2E + 6 (w/6N1), PROCEED TO STEP (59).

(51) Remove rearmost top panel.



(52) Remove bottom panel of the next bay.

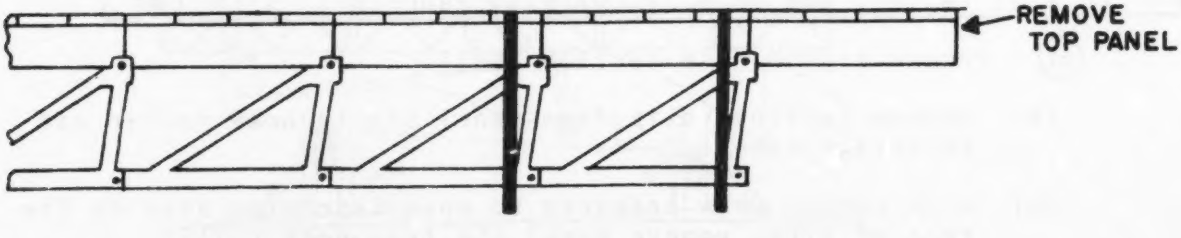


For 2E + 7(w/5N1), PROCEED TO STEP (60).

For 2E + 7 (w/6N1) and 2E + 8 (w/5N1), PROCEED TO STEP (59).

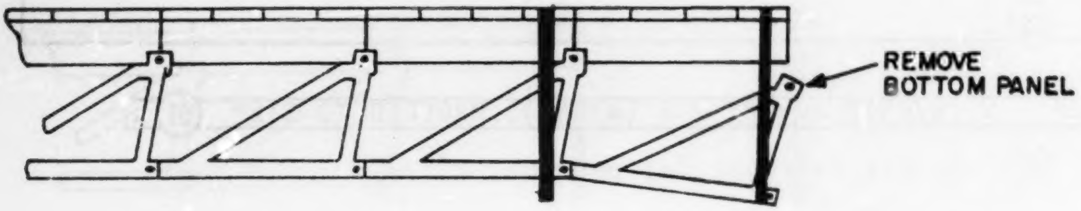
For 2E + 8 (w/7N1), 2E + 9 (w/7N1), and 2E + 10 (w/7N1), PROCEED TO STEP (55).

(53) Remove rearmost top panel.



2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

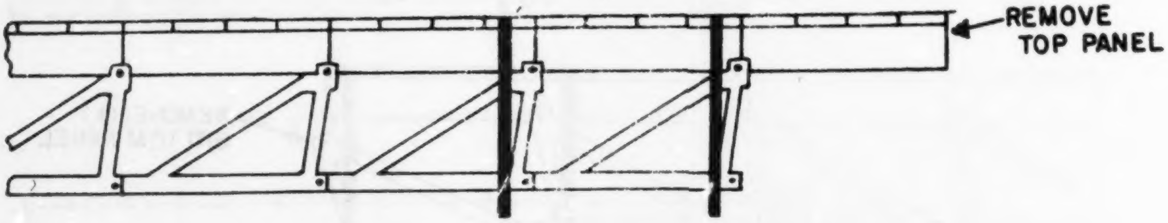
(54) Remove bottom panel of the next bay.



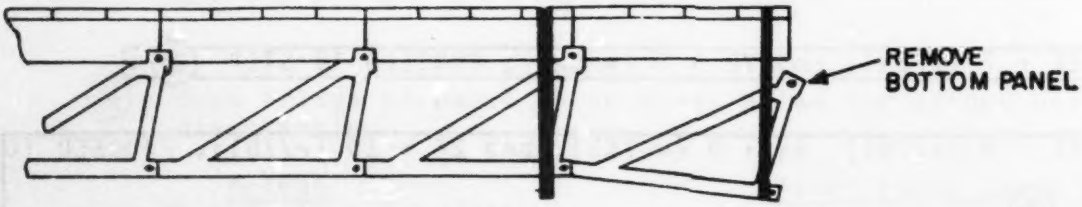
For 2E + 9 (w/6N1) and 2E + 10 (w/6N1), PROCEED TO STEP (59).

For 2E + 11 (w/8N1) and 2E + 12 (w/8N1), PROCEED TO STEP (57).

(55) Remove rearmost top panel.



(56) Remove bottom panel of the next bay.



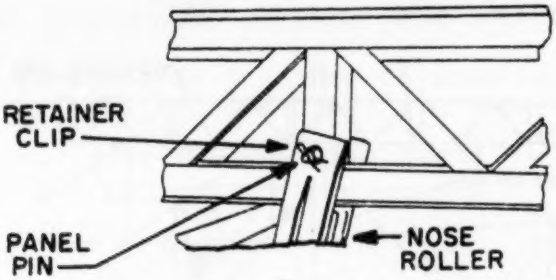
For 2E + 11 (w/7N1) and 2E + 12 (w/7N1), PROCEED TO STEP (58).

(57) Remove eighth nose section (8N1).

(a) Remove retainer clip from panel pin in nose roller and anchorage tube.

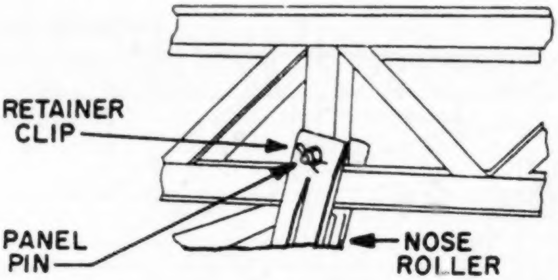
(b) With center crew prepared to move launching nose to the rear of site, remove panel pin from nose roller.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).



(c) Move launching nose to the rear until the next anchorage tube is slightly behind nose roller.

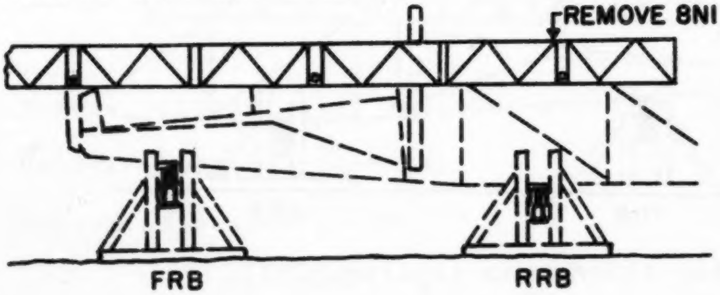
(d) Put panel pin through nose roller and anchorage tube.



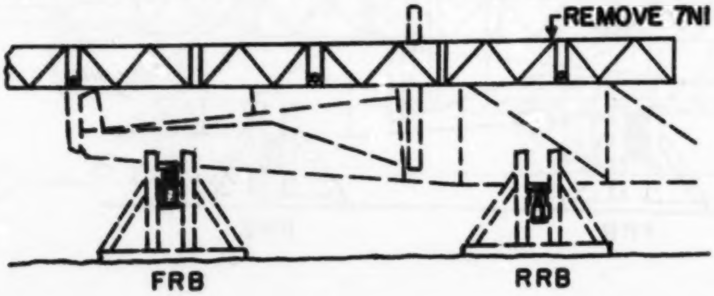
(e) Remove retainer clip and nose pin from last nose sectios.

(f) Unlock shoot bolts in last nose section.

(g) Remove 8N1 nose section.

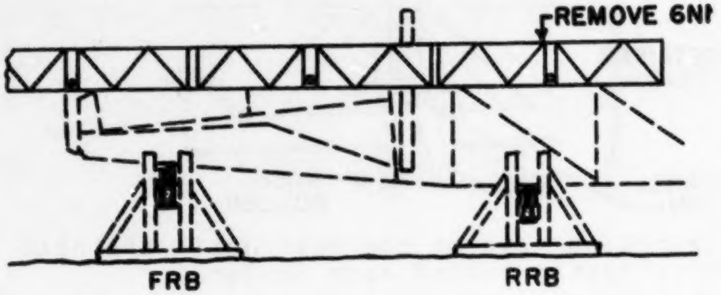


(58) Remove seventh nose section (7N1).

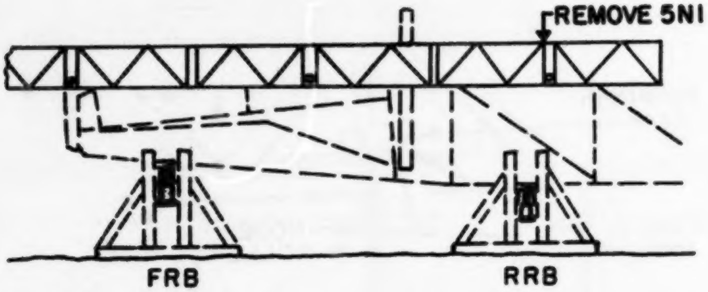


2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

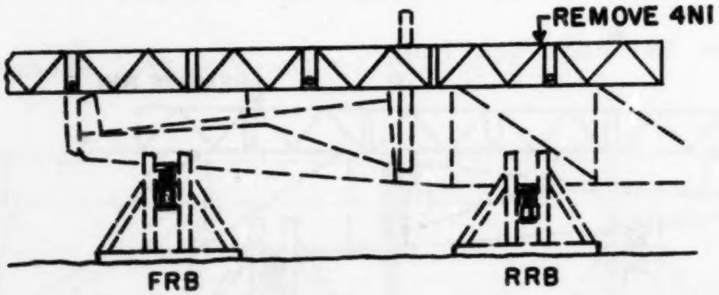
(59) Remove sixth nose section (6N1).



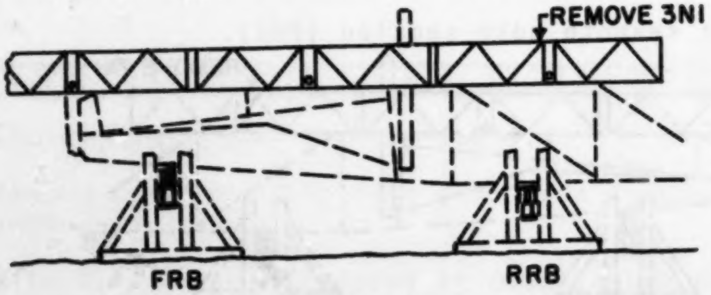
(60) Remove fifth nose section (5N1).



(61) Remove fourth nose section (4N1).



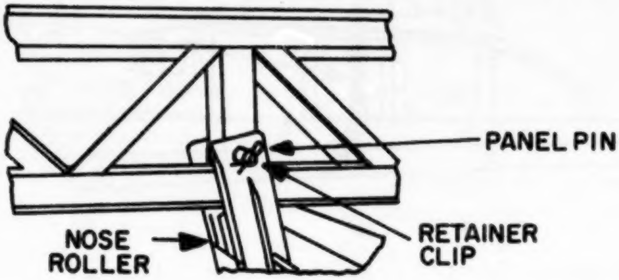
(62) Remove third nose section (3N1).



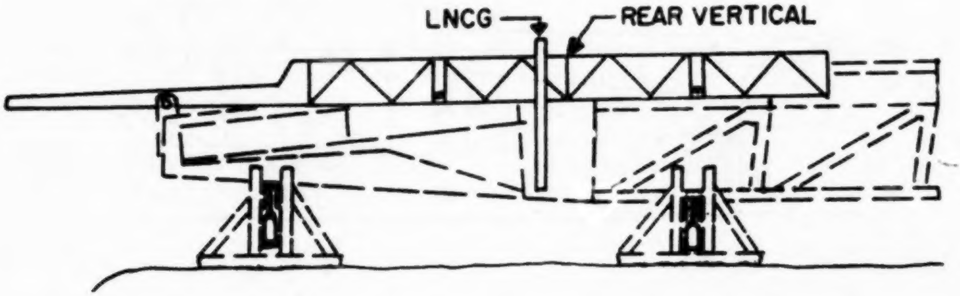
2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

(63) Remove second nose section (2N1).

(a) With center crew prepared to move launching nose to the rear of site, remove panel pin from the nose roller.



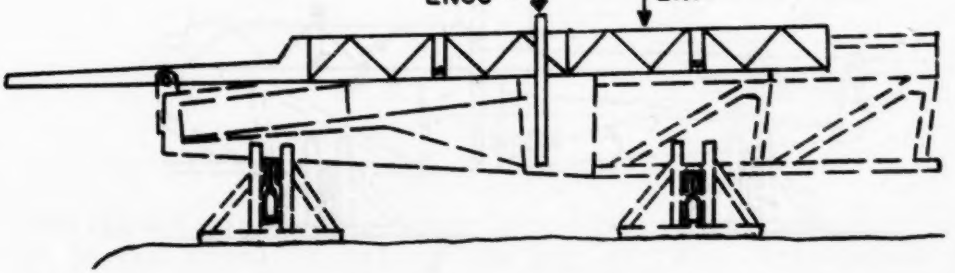
(b) Move launching nose to rear until the rear vertical of nose section (1N1) has passed the rollers in the LNCG. Put a carrying bar through the nose section. If tip of nose is uphill, place bar in front of rollers. If tip is downhill, place bar behind rollers.



(c) Remove retainer clip and nose pin from 2N1.

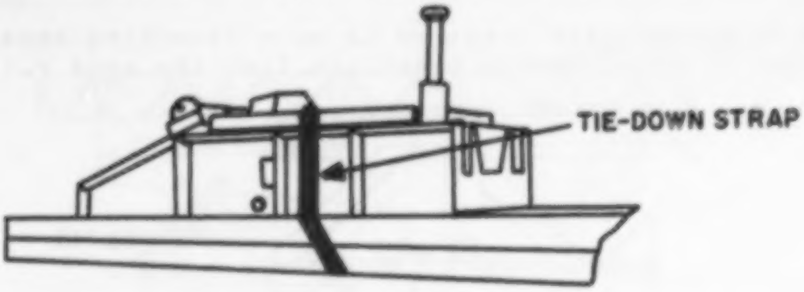
(d) Unlock shoot bolts in 2N1.

(e) Remove nose section 2N1.



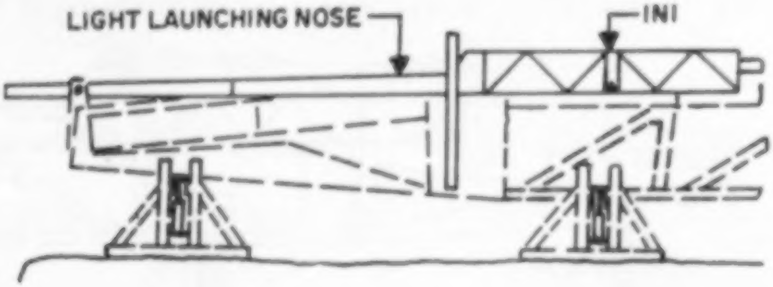
2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

(64) Remove LRP from tip of launching nose.



(65) Remove first nose section (1N1).

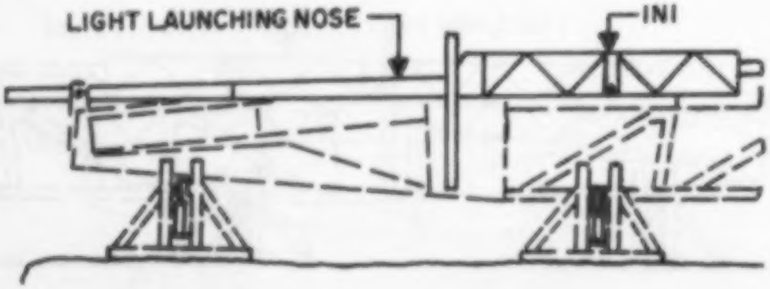
(a) Move launching nose toward rear of site. Stop movement when the rear of the light launching nose rear section is over the LNCG.



(b) Remove retainer clip and nose pin from nose section (1N1).

(c) Unlock shoot bolts in 1N1.

(d) Remove nose section (1N1).

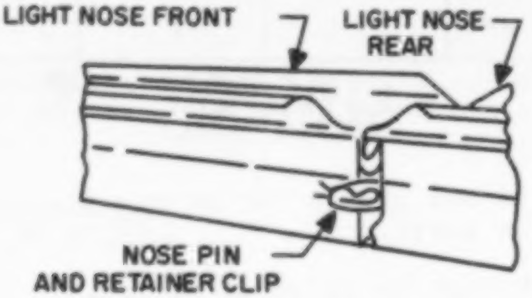


2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

(66) Remove light launching nose from nose roller and LNCG. Disassemble light launching nose on the ground behind LNCG.

(a) Remove retainer clip and nose pin between nose sections.

(b) Disengage nose sections from each other.

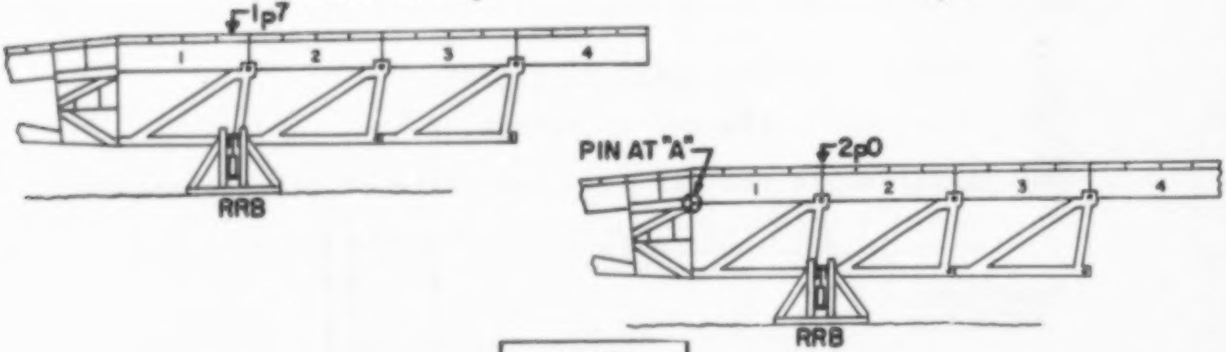


NOTE

Additional booms to panel points 1p7 and 2p0 are required because of the way the bottom panels are removed and the pin in the last top panel and junction panel.

(67) Boom bridge to panel point given below for bridge being disassembled.

Bridge	Panel Point (over RRB)
2E + 1	1p7
All other bridges	2p0



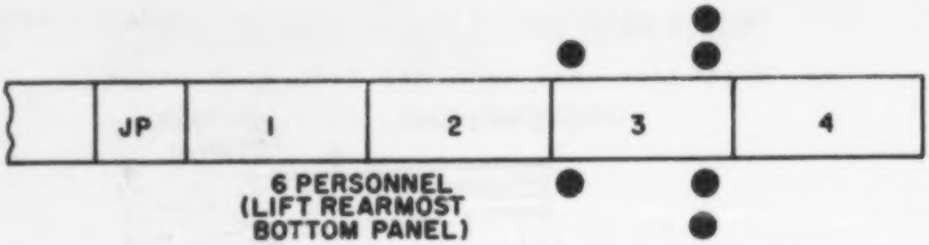
NOTE

The panel pin in the upper pin jaws of the junction panel and last top panel is called the pin at "A". This panel pin must be removed before the top panel of bay 4 can be removed. The removal of the pin at "A" serves the same purpose as unlocking the bottom panel shoot bolt.

2-30. DISASSEMBLY - DOUBLE STORY - 2E + 1 thru 2E + 12 BAY (Restricted Site - Original Far Bank) (Cont).

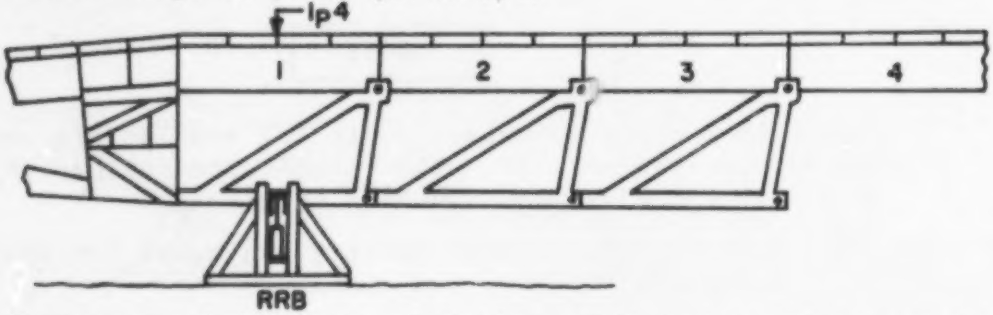
(68) To remove the pin at "A".

(a) Position six personnel around the rearmost bottom panel.



(b) Remove the pin at "A" as the six personnel lift the bottom panel.

(69) Boom bridge to panel point 1p4.



(70) Remove remaining bays of bridge until bay 2 bottom panel is removed.

(71) Remove and disassemble RRB.

(72) Remove remaining bays of bridge.

(73) Disassemble the end of bridge.

(74) Disassemble the FRB and clear site of all components.

SECTION IV. OPERATION UNDER UNUSUAL CONDITIONS

	PARAGRAPH	PAGE
Launching In High Winds	2-31	2-689
Launching Up Steep Slopes	2-32	2-691

OVERVIEW

The purpose of this section is to discuss adverse conditions under which the bridge may have to be launched and the methods of controlling the launch.

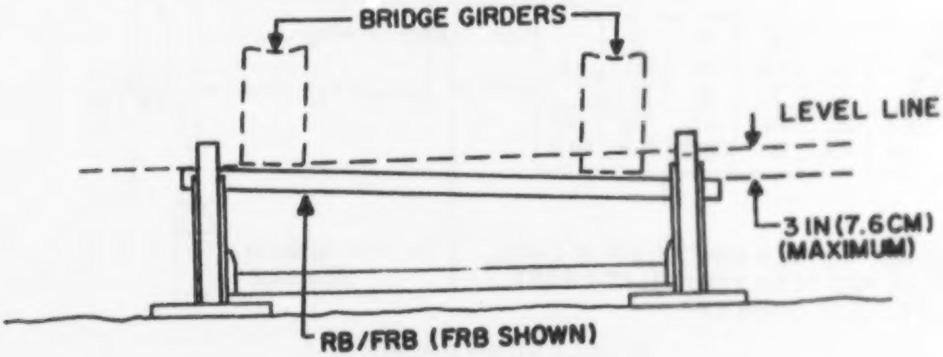
2-31. LAUNCHING IN HIGH WINDS.

a. When launching with the building area sheltered and the gap exposed, wind loads may cause the bridge to rotate about the RB/FRB until the bridge is jacked down onto the far bank.

b. Bridges must not be launched in more severe conditions than those given below.

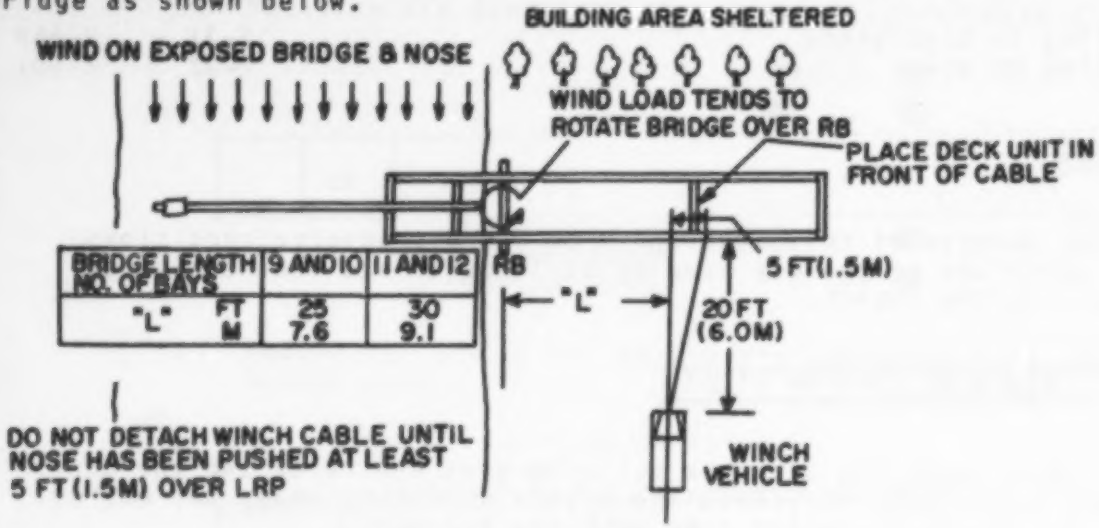
BRIDGE LENGTH	MAXIMUM CONDITIONS DURING LAUNCHING WIND SPEED	CROSS FALL ON BRIDGE
4 to 12 bays single story	40 mph (65 km/ph)	1 in 10*
1 to 12 bays double story	40 mph (65 km/ph)	1 in 10*

* RB/FRB must be approximately [within 3 in (7.6 cm)] level when the launching nose has touched the far bank.



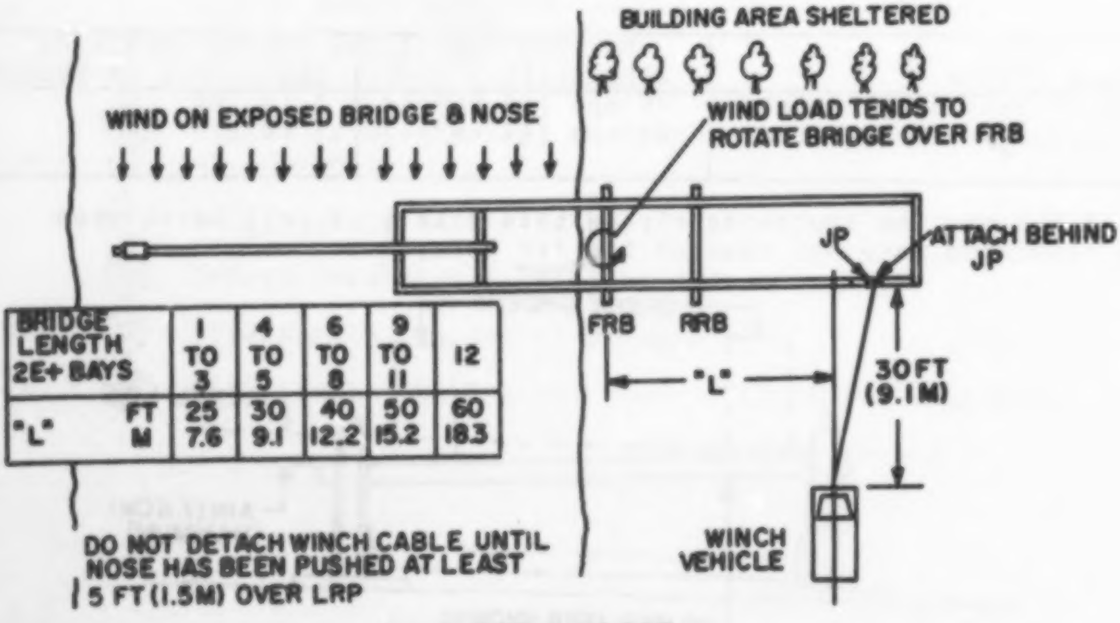
2-31. LAUNCHING IN HIGH WINDS (Cont).

c. When launching bridges in winds over 30 mph (48 km/ph) it is necessary to attach a vehicle winch cable at right angles to the bridge as shown below.


BUILDING AREA SHELTERED
WIND ON EXPOSED BRIDGE & NOSE
WIND LOAD TENDS TO ROTATE BRIDGE OVER RB
PLACE DECK UNIT IN FRONT OF CABLE
RB
5 FT(1.5M)
"L"
20 FT (6.0M)
DO NOT DETACH WINCH CABLE UNTIL NOSE HAS BEEN PUSHED AT LEAST 5 FT (1.5M) OVER LRP
WINCH VEHICLE

BRIDGE LENGTH NO. OF BAYS		9 AND 10	11 AND 12
"L"	FT	25	30
	M	7.6	9.1

SINGLE STORY BRIDGE


BUILDING AREA SHELTERED
WIND ON EXPOSED BRIDGE & NOSE
WIND LOAD TENDS TO ROTATE BRIDGE OVER FRB
JP
ATTACH BEHIND JP
FRB
RRB
"L"
30 FT (9.1M)
DO NOT DETACH WINCH CABLE UNTIL NOSE HAS BEEN PUSHED AT LEAST 5 FT (1.5M) OVER LRP
WINCH VEHICLE

BRIDGE LENGTH 2E+ BAYS		1 TO 3	4 TO 5	6 TO 8	9 TO 11	12
"L"	FT	25	30	40	50	60
	M	7.6	9.1	12.2	15.2	18.3

DOUBLE STORY BRIDGE

d. The winch cable is used to prevent the tail of the bridge from moving sideways during launch. By taking in as the tail approaches the vehicle and paying it out as it moves away the bridge is held over the centerline.

2-31. LAUNCHING IN HIGH WINDS (Cont).

e. The winch cable is not detached from the tail of bridge until at least 5 ft (1.5 m) (single story) and 10 ft (3.0 m) (double story) of the launching nose has passed the landing roller pedestal.

f. During the launching, the far bank crew should:

(1) Steady the nose on the landing roller pedestal until at least 20 ft. (6.0 m) of the launching nose has passed the landing roller pedestal.

(2) Be ready to lower the landing roller pedestal jack if any sign of instability develops.

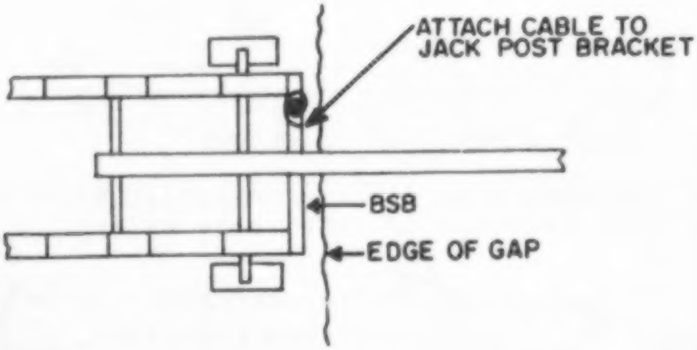
2-32. LAUNCHING UP STEEP SLOPES.

a. In launching up slopes of 1 in 30 to 1 in 10, it may become necessary to complete the launch with the aid of a hauling cable. It will also be necessary to use a vehicle and a push bar during launch.

b. The following procedure describes a method of launching a bridge up a steep slope.

① Before booming attach cable to far bank bankseat beam on near bank.

② Loop remaining slack of cable and place on nose unit.

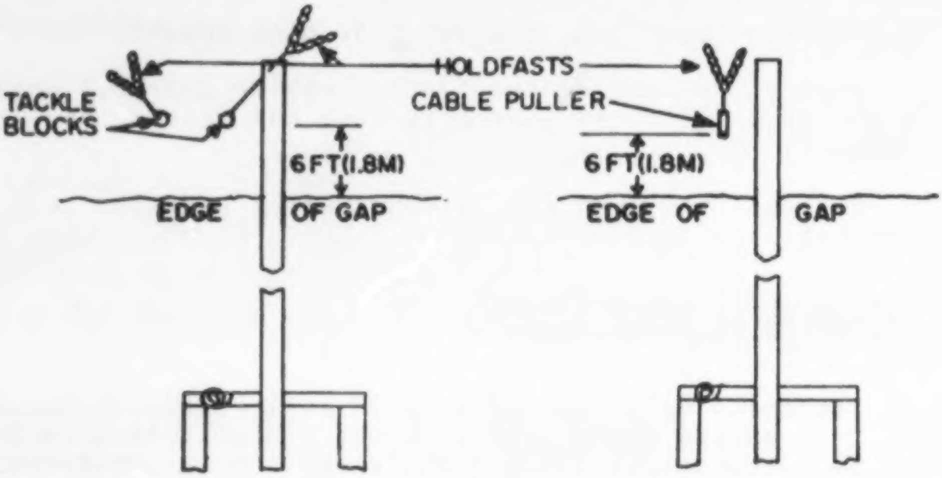


③ Begin booming bridge with the aid of a vehicle and push bar.

④ After nose touches down on far bank, carry two holdfasts and two block and tackle over to far bank if a vehicle winch is to be used. If cable puller is to be used, only one holdfast is needed.

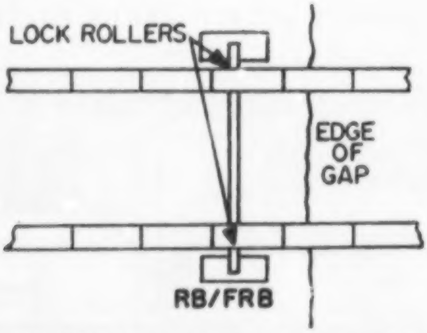
2-32. LAUNCHING UP STEEP SLOPES (Cont).

⑤ To one side of bridge centerline, attach block and tackle units or cable pullers to holdfasts. Units should be placed a minimum of 6 feet (1.8 m) from edge of bank.

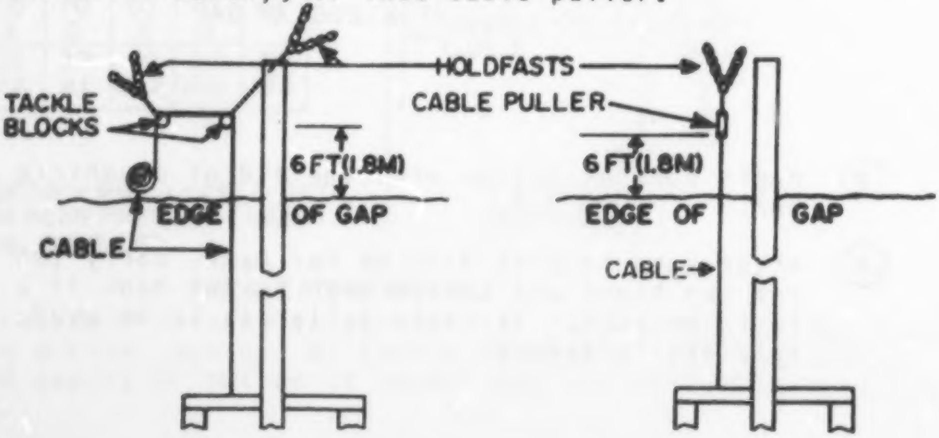


⑥ Place nose unit on landing roller pedestal.

⑦ Lock RB/FRB rollers.

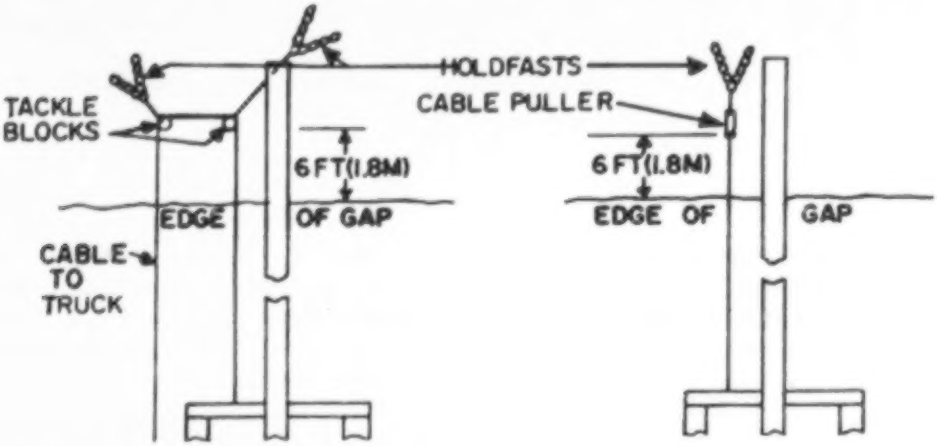


⑧ Put cable through block and tackle units (for vehicle assisted launch), or into cable puller.



2-32. LAUNCHING UP STEEP SLOPES (Cont).

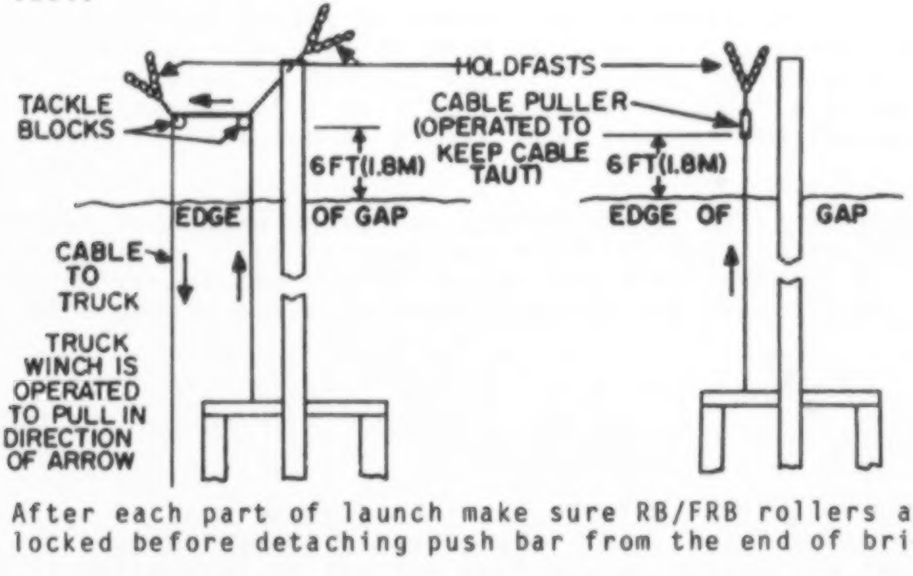
⑨ Connect other end of cable to winch vehicle on home bank or if using cable puller, operate it from the far bank.



⑩ Make sure vehicle and push bar are connected to last bay or end of bridge.

⑪ Unlock RB/FRB rollers.

⑫ Continue to boom in the following manner: At the same time and at the same speed as push bar vehicle pushes bridge forward, winch vehicle pulls in the opposite direction, or cable puller is operated to keep cable taut.


TACKLE BLOCKS
HOLDFASTS
CABLE PULLER (OPERATED TO KEEP CABLE TAUT)
6 FT(1.8M)
6 FT(1.8M)
EDGE OF GAP
EDGE OF GAP
CABLE TO TRUCK
TRUCK WINCH IS OPERATED TO PULL IN DIRECTION OF ARROW

⑬ After each part of launch make sure RB/FRB rollers are locked before detaching push bar from the end of bridge.

⑭ Disconnect cable from bankseat beam after the far bank end of bridge has been lowered to ground.

SECTION V. OVERBRIDGES

	PARAGRAPH	PAGE
Overbridges-General	2-33	2-695
Design	2-34	2-695
Assembly Procedures	2-35	2-698

OVERVIEW

This section provides the information needed to construct overbridges in single and double story configuration. Overbridges are constructed over existing bridges that have been damaged or have a low class capacity.

2-33. OVERBRIDGES-GENERAL.

a. Overbridges are constructed over existing bridges using the abutments as bearing points for the MGB. Single and double story bridges can be built depending on mission load class requirement. In either case, it is important to ensure that the overbridge does not come into contact with the existing bridge span while traffic is crossing.

b. Overbridges can be built with or without launching noses.

(1) With launching noses, an overbridge is built as if it was being put across a gap. The roller beam closest to the existing bridge must be positioned so that it does not touch the existing span. Also, the roller beam height should be kept high enough to prevent launching nose or far bank end of bridge from coming into contact with the existing span.

(2) Without launching noses, an overbridge is built in place over the existing span. Ensure that the existing span is capable of supporting the weight of the overbridge during construction, particularly if a double story is being constructed over a long, low class bridge.

2-34. DESIGN.

a. The design for overbridges constructed with launching noses is the same as a bridge being built over a gap. Particular attention must be paid to deflection of the far bank end of bridge and launching nose cross girder setting.

2-34. DESIGN Cont.

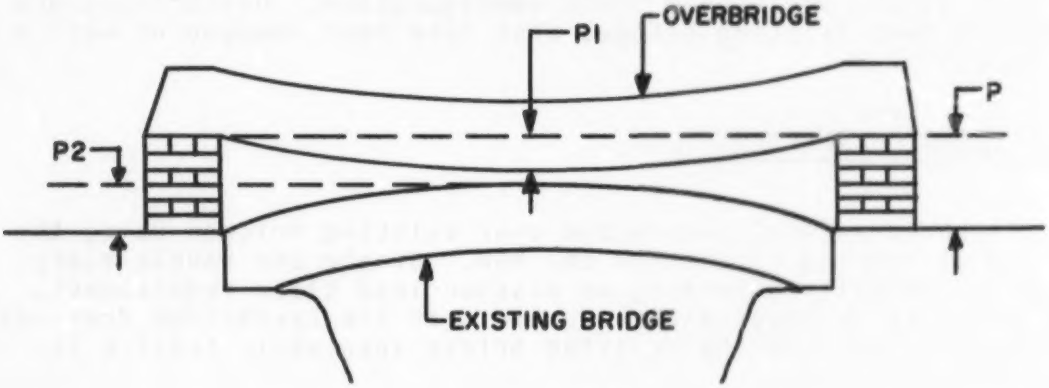
b. For all overbridges, the amount of packing under the bankseat beam must be calculated using the following formula and procedures:

Formula $P = P1 + P2$

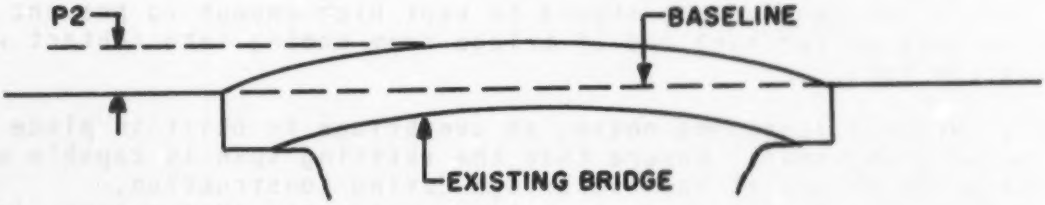
P - Height of packing

P1 - Deflection of overbridge

P2 - Height of existing bridge above baseline through bearing points at ends of existing bridge.



(1) Measure height of existing bridge (P2) by using as datum, the baseline joining the ground levels at the proposed locations of the BSBs.



(2) Find maximum deflection (P1) of overbridge to be constructed from the following tables.

2-34. DESIGN Cont.

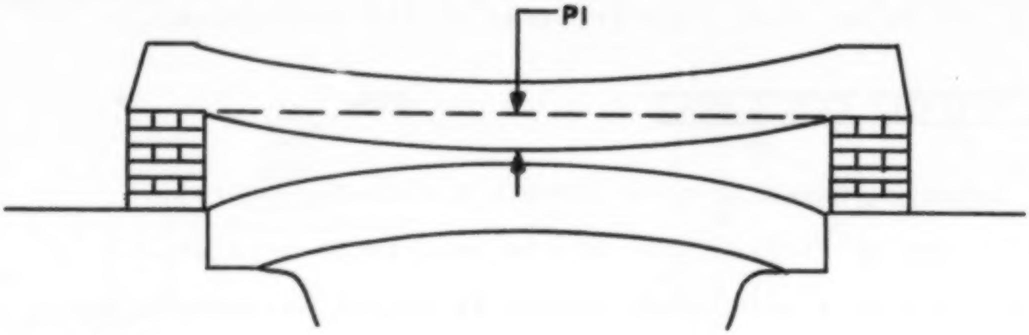


Table 2-43. Central and Eccentric Deflections.

Span Length SSB's		Deflections, Inches (Centimeters)		
Feet	Meters	DL Load	DL and LL (central)	DL and LL (eccentric)
26	7.9	0.5 (1.27)	1.5 (3.81)	1.75 (4.45)
32	9.8	0.5 (1.27)	2.75 (6.99)	3.25 (8.26)
38	11.6	1.0 (2.54)	4.25 (10.8)	5.5 (13.97)
44	13.4	1.25 (3.28)	4.5 (11.4)	5.75 (14.61)
50	15.2	1.75 (4.45)	6.5 (16.51)	8.5 (21.63)
56	17.1	2.5 (6.35)	7.25 (18.32)	9.25 (23.5)
62	18.9	3.25 (8.26)	9.5 (24.31)	12.0 (30.48)
68	20.7	4.5 (11.40)	11.5 (29.21)	14.75 (37.47)
74	22.6	5.75 (14.61)	14.5 (36.83)	18.75 (47.67)

Span Length DSB's		Deflections, Inches (Centimeters)		
Feet	Meters	DL Load	DL and LL (central)	DL and LL (eccentric)
37	11.3	18.5 (47.0)	18.5 (47.5)	18.5 (47.5)
43	13.1	18.5 (47.0)	19.0 (48.2)	19.0 (48.2)
49	14.9	18.7 (47.5)	19.5 (49.5)	19.5 (49.5)
55	16.8	19.0 (48.2)	20.0 (50.8)	20.25 (51.4)
61	18.6	19.25 (48.9)	20.75 (52.7)	21.0 (53.3)
67	20.4	19.5 (49.5)	21.25 (54.0)	23.25 (55.2)
73	22.3	20.0 (50.8)	22.25 (56.5)	22.75 (57.8)
79	24.1	20.5 (52.1)	23.25 (59.0)	24.0 (60.9)
85	25.9	21.0 (53.3)	24.5 (62.2)	27.0 (64.1)
91	27.7	21.5 (54.6)	26.0 (66.0)	28.75 (68.6)
97	29.6	22.0 (55.9)	27.5 (69.8)	28.75 (73.0)
103	31.4	22.75 (57.8)	29.5 (74.9)	31.0 (78.7)

Notes: DL = Dead load.
LL = Live load. Tracked vehicle of maximum load class allowed.

2-34. DESIGN Cont.

(3) Using information found in (1) and (2), determine amount of packing (P) to be used under the ends of the overbridge.

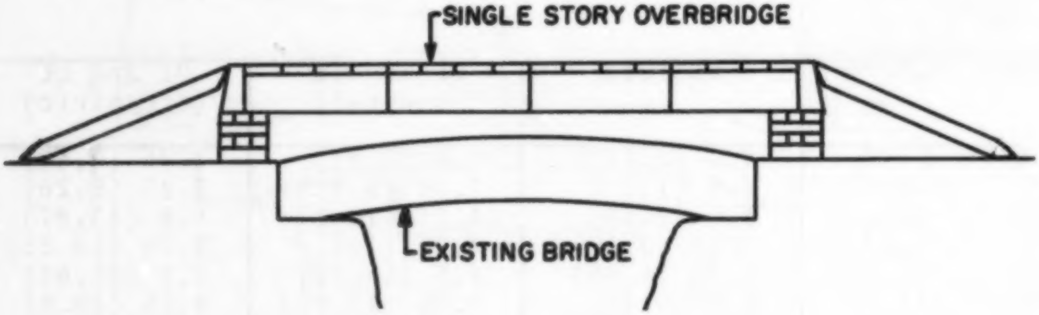
2-35. ASSEMBLY PROCEDURES.

a. Using a launching nose (single and double story).

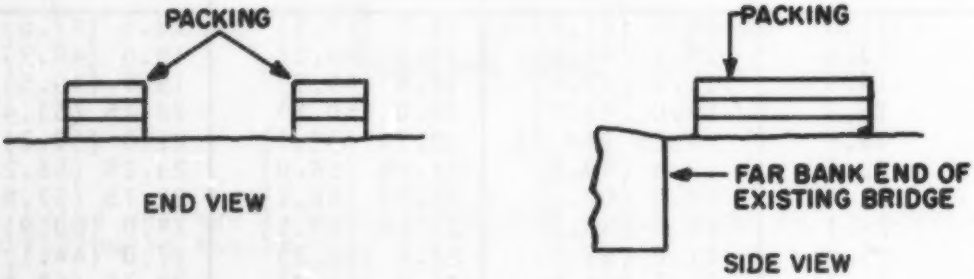
(1) Set up RB/FRB clear of the span to be bridged.

(2) Assemble and launch bridge as though bridging a gap.

b. Without a launching nose (single story)

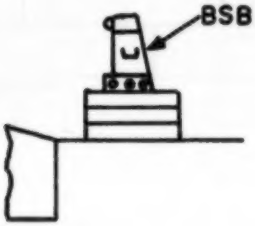


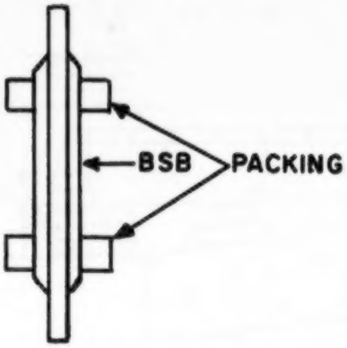
① Position and stack packing (3 in x 8 in x 36 in) on site where far end of bridge will set. Packing must be a stacked a minimum of 6 in (15.2 cm) and can be stacked as high as required by design.



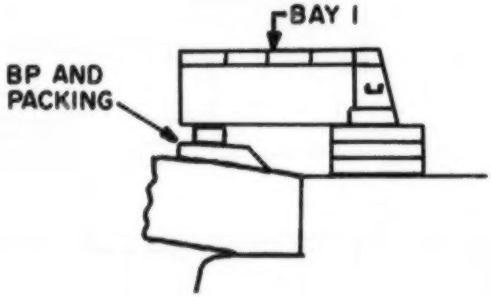
2-35. ASSEMBLY PROCEDURES (Cont).

② Place far bank BSB on packing.

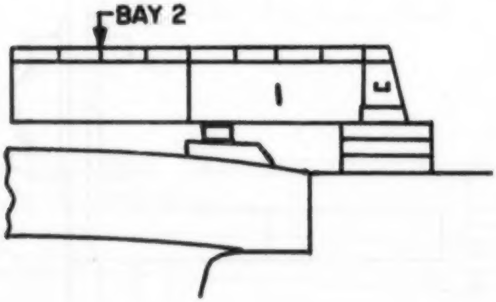




③ Fit first pair of top panels and position single story baseplates and packing under the end of bay 1. Packing on baseplate must be stacked high enough to keep rear of bridge from touching existing span.

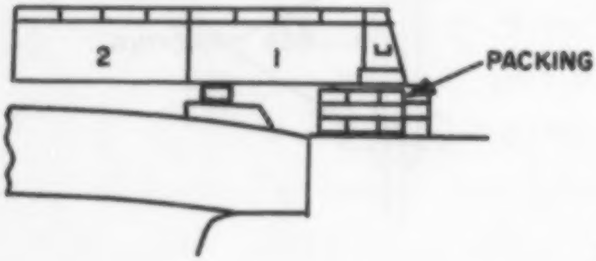


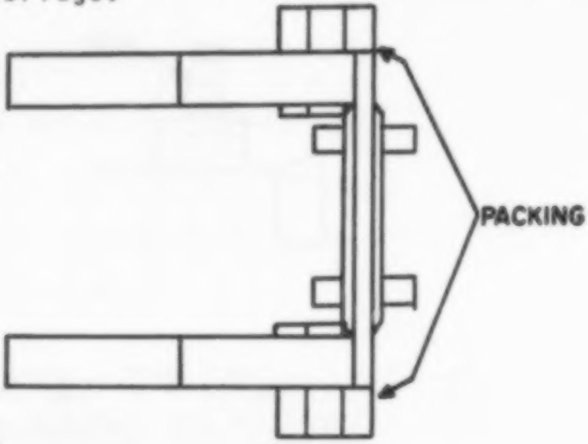
④ Fit top panels of bay 2.



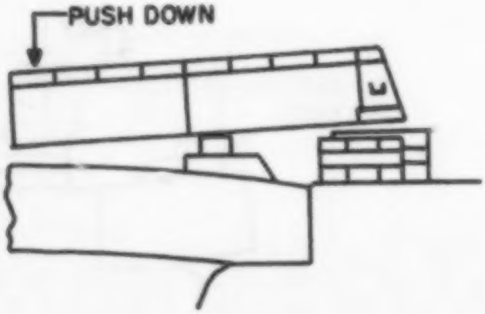
2-35. ASSEMBLY PROCEDURES (Cont).

⑤ Position and stack packing (3 in x 8 in x 36 in) under BSB and bay 1. Packing must be stacked high enough to keep bridge clear of existing bridge.

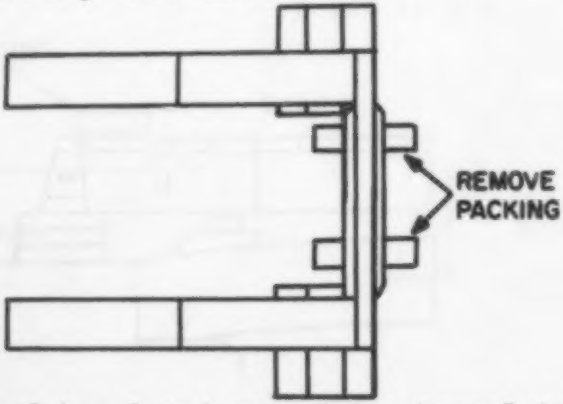




⑥ Push down on end of bay 2.

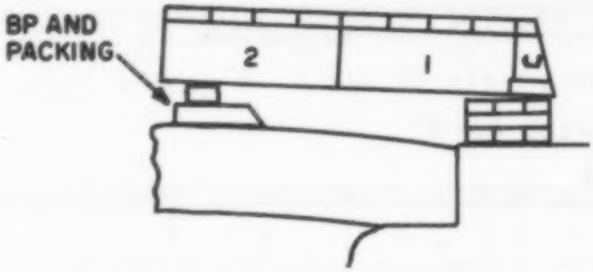


⑦ Remove packing from under BSB.

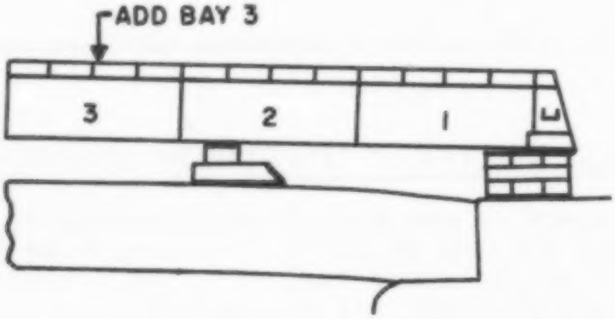


⑧ Lift end of bay 2 and reposition baseplates and packing under rear of bay 2.

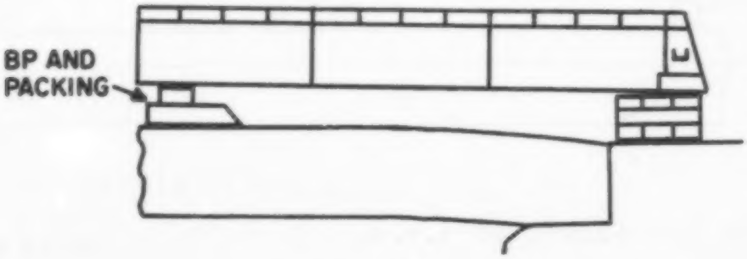
2-35. ASSEMBLY PROCEDURES (Cont).



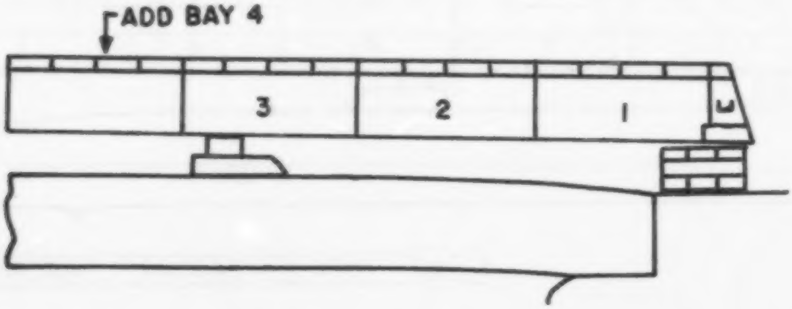
(9) Fit top panels of bay 3.



(10) Lift end of bay 3 and reposition baseplates and packing under rear of bay 3.



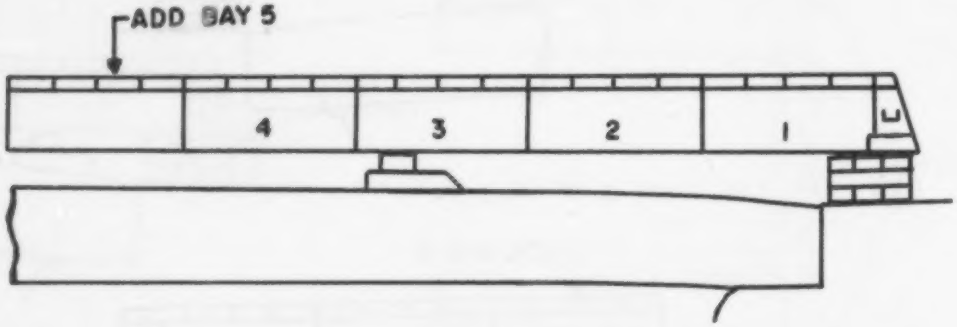
(11) Fit top panels of bay 4.



2-35. ASSEMBLY PROCEDURES (Cont).

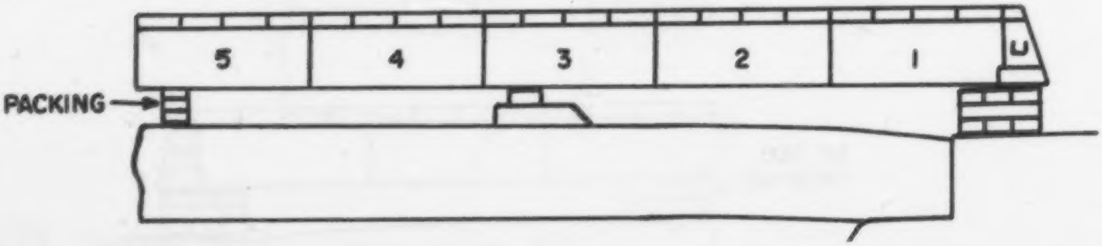
For 4 bay bridge, PROCEED TO STEP ㉔.

⑫ Fit top panels of bay 5.

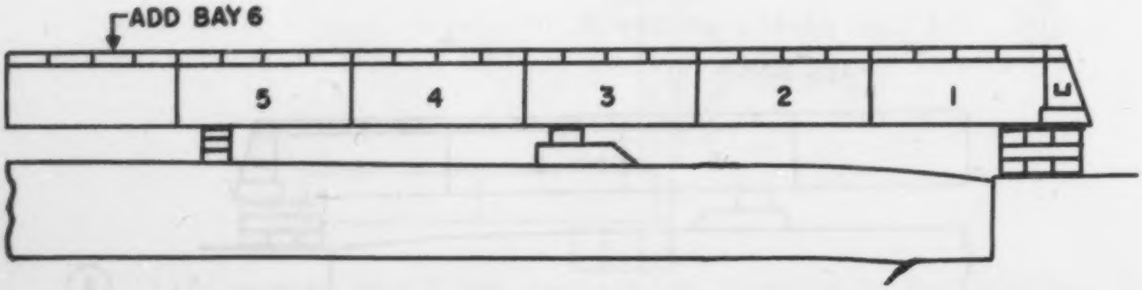


For 5 bay bridge, PROCEED TO STEP ㉔.

⑬ Lift end of bay 5 as high as possible. Place packing under the end of bay 5. This must be done to ensure that as bays are added they will not contact the existing bridge before all bays are connected.



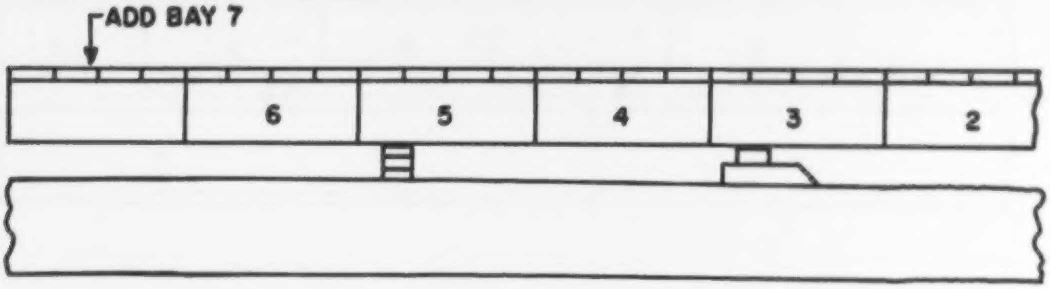
⑭ Fit top panels of bay 6.



2-35. ASSEMBLY PROCEDURES (Cont).

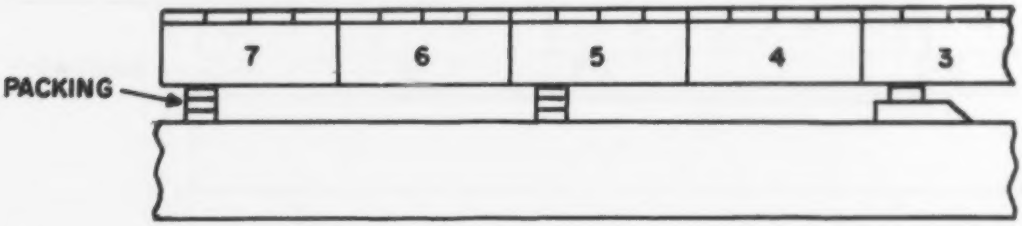
For 6 bay bridge, PROCEED TO STEP ㉔.

⑮ Fit top panel of bay 7.

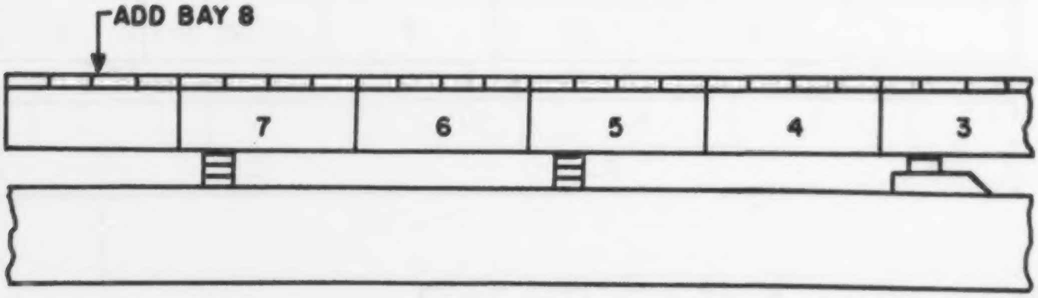


For 7 bay bridge, PROCEED TO STEP ㉔.

⑯ Lift end of bay 7 as high as possible. Place packing under the end of bay 7.



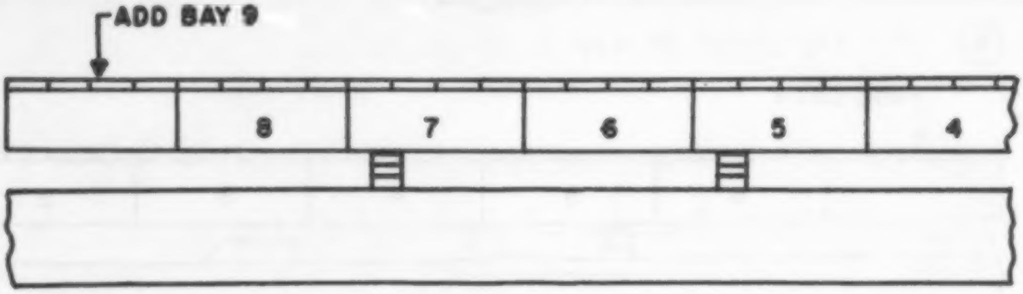
⑰ Fit top panels of bay 8.



For 8 bay bridge, PROCEED TO STEP ㉔.

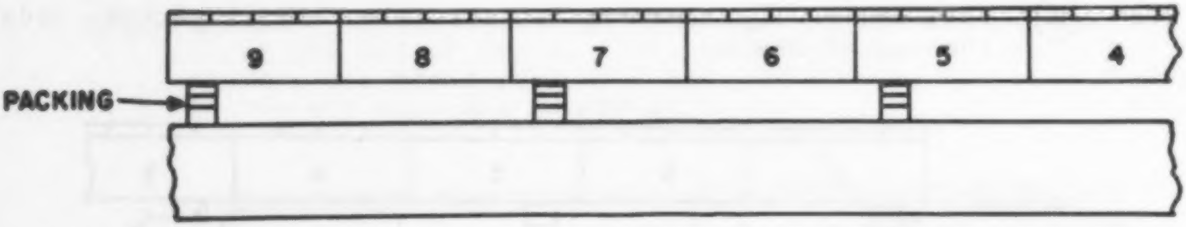
2-35. ASSEMBLY PROCEDURES (Cont).

⑱ Fit top panels of bay 9.

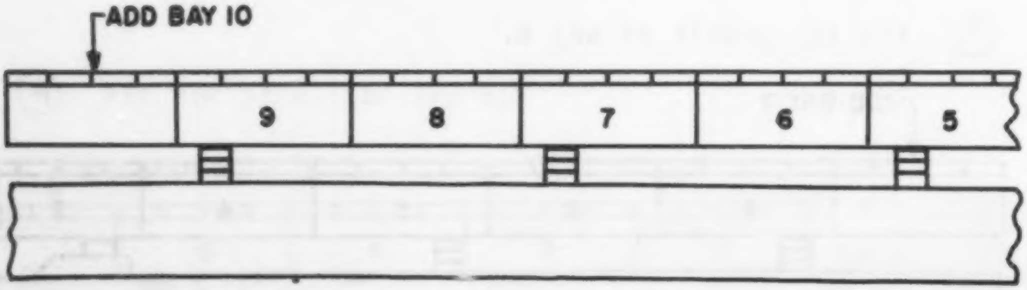


For 9 bay bridge, PROCEED TO STEP ㉔.

⑲ Lift end of bay 9 as high as possible. Place packing under the end of bay 9.



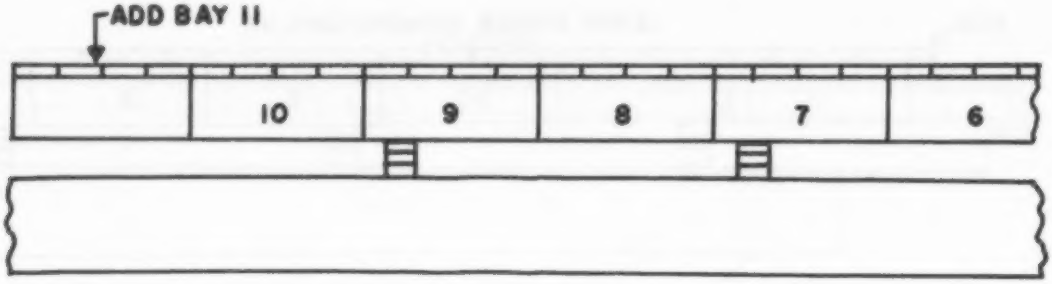
⑳ Fit top panels of bay 10.



For 10 bay bridge,-PROCEED TO STEP ㉔.

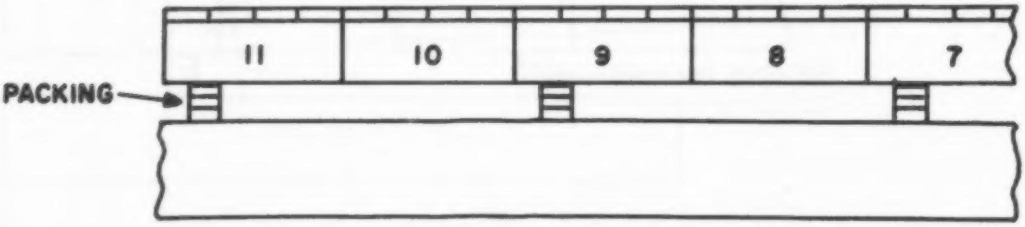
2-35. ASSEMBLY PROCEDURES (Cont).

㉑ Fit top panels of bay 11.

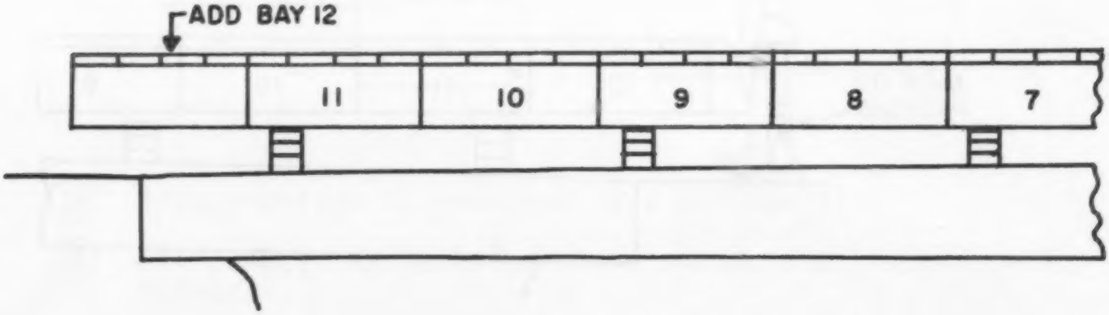


For 11 bay bridge, PROCEED TO STEP ㉔.

㉒ Lift end of bay 11 as high as possible. Place packing under the end of bay 11.

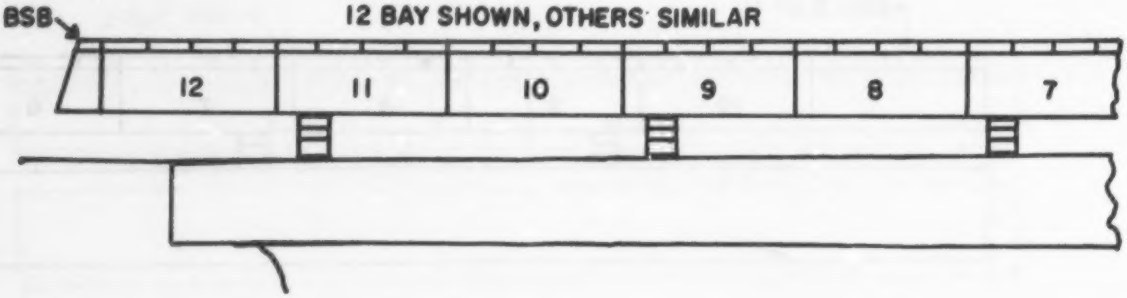


㉓ Fit top panels of bay 12.



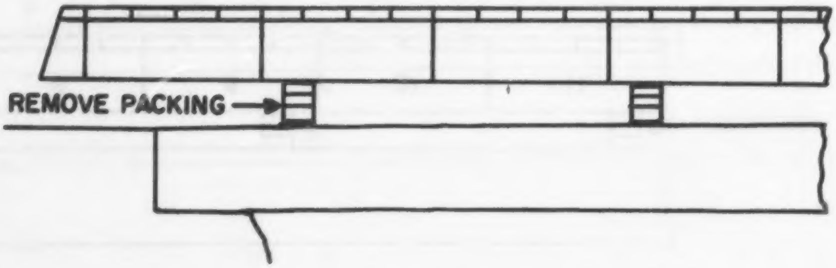
2-35. ASSEMBLY PROCEDURES (Cont).

㉔ Fit rear bankseat beam.

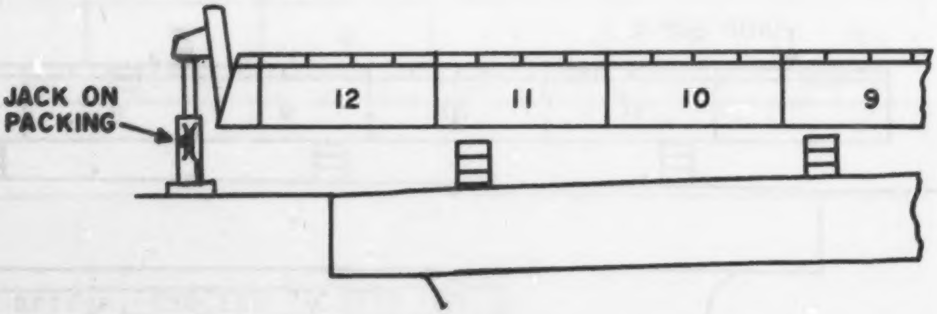


NOTE

Fitting of rear bankseat beam may require removal of packing from under one girder.

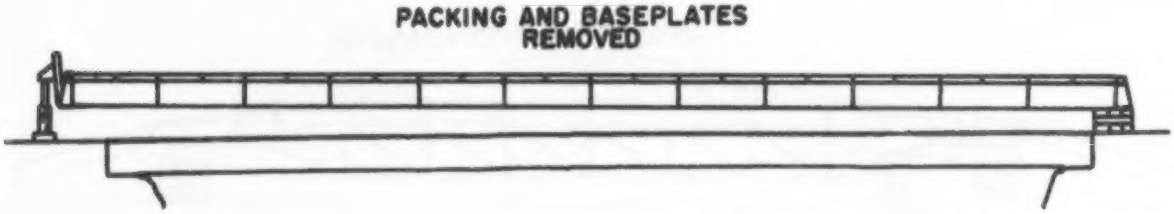


㉕ Jack up rear end of bridge.

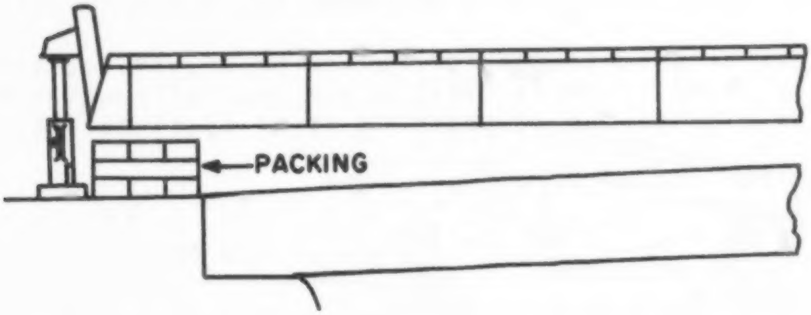


2-35. ASSEMBLY PROCEDURES (Cont).

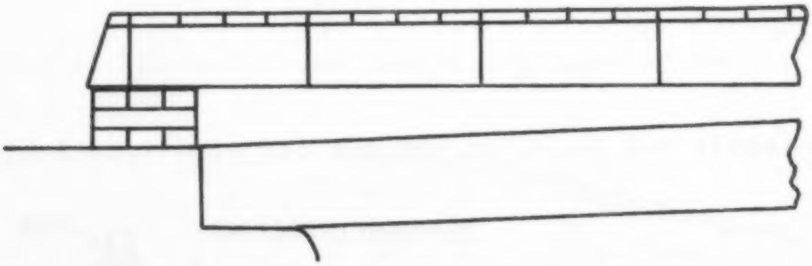
㉖ Remove packing and baseplates from under girders.



㉗ Position and stack packing (3 in x 8 in x 36 in) under rear bankseat beam and last bay of bridge. Packing must be stacked high enough to ensure that overbridge will not touch existing bridge.



㉘ Jack down rear of bridge and remove all jacking equipment.



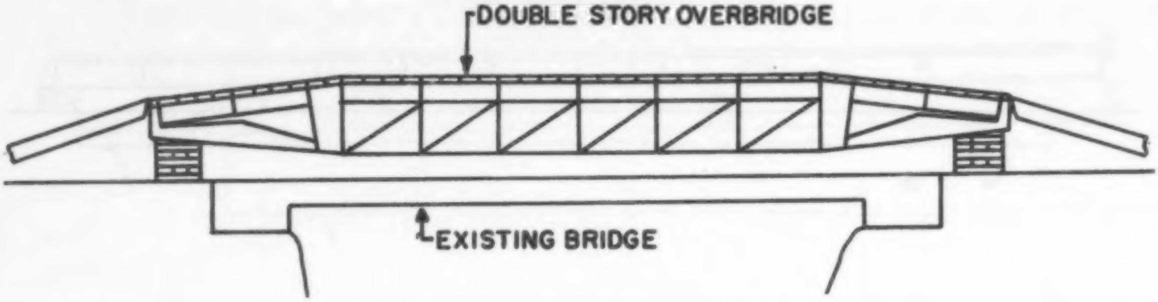
㉙ Anchor bridge if required (see Section VI).

㉚ Fit ramps, lay decking, place curbs, and install guide markers.

㉛ Post classification signs and clear site of all equipment.

2-35. ASSEMBLY PROCEDURES (Cont).

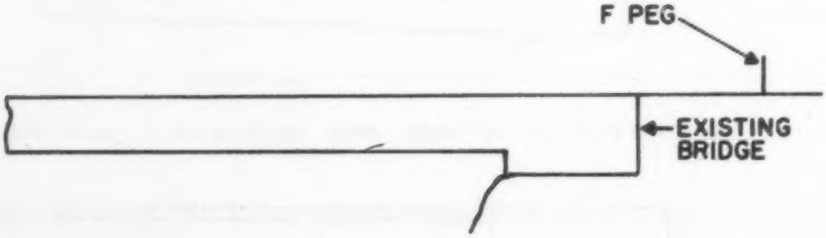
c. Without a launching nose (2E + 3 through 2E + 12 bay double story).



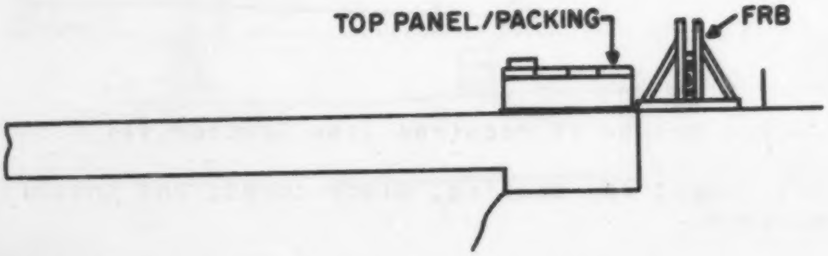
NOTE

Packing can be used instead of roller beams, if the site is absolutely level, jacking takes place centrally under the panels at the jaw blocks, and all packing is of equal height.

① Mark far end of bridge position.

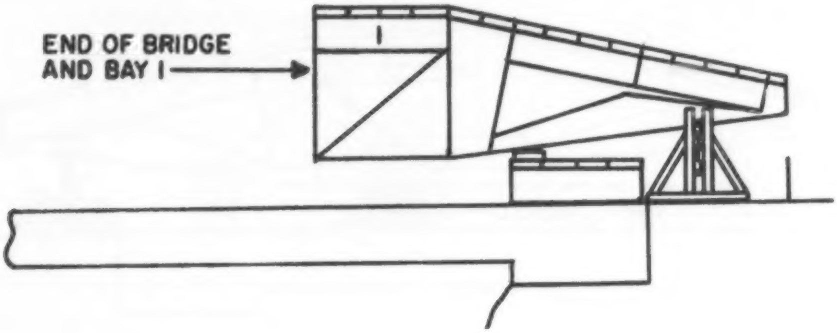


② Assemble and position FRB and top panels/packing.

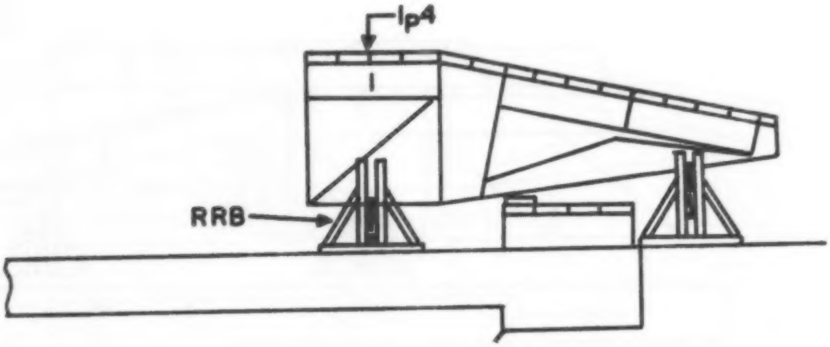


2-35. ASSEMBLY PROCEDURES (Cont).

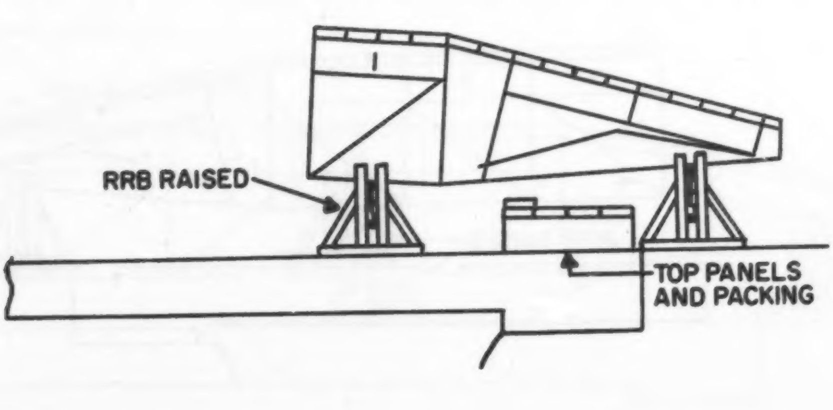
③ Build end of bridge and first bay on FRB and top panels/packing.



④ Assemble and position RRB under panel point 1p4.

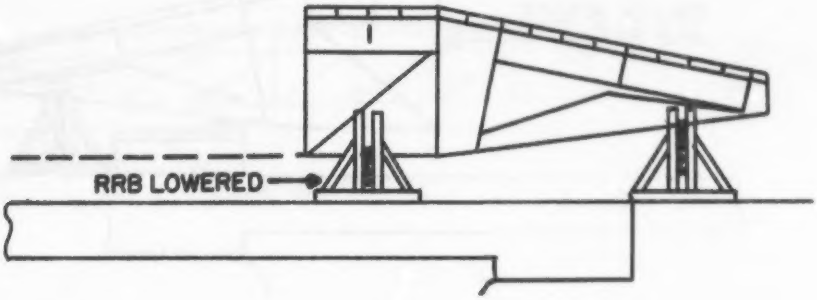


⑤ Jack up RRB until top panels and packing can be removed.

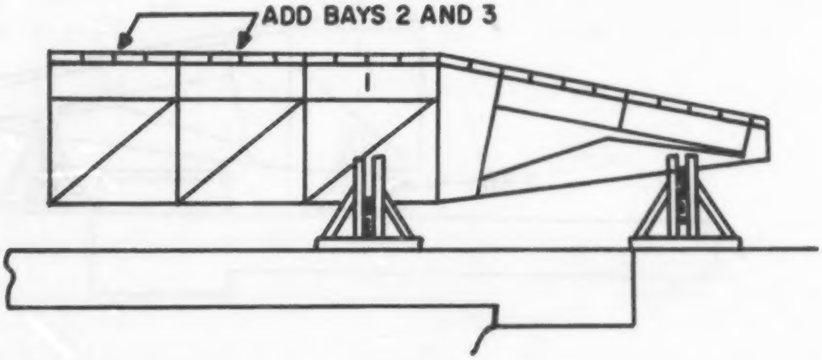


2-35. ASSEMBLY PROCEDURES (Cont).

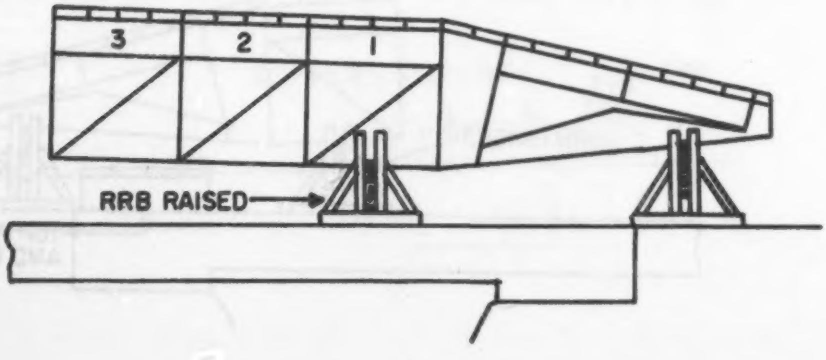
⑥ Lower/raise (as needed) RRB and FRB until bay 1 is at a suitable height to permit easy installation of additional bays. Level roller beams with carpenters level.



⑦ Add bays 2 and 3.

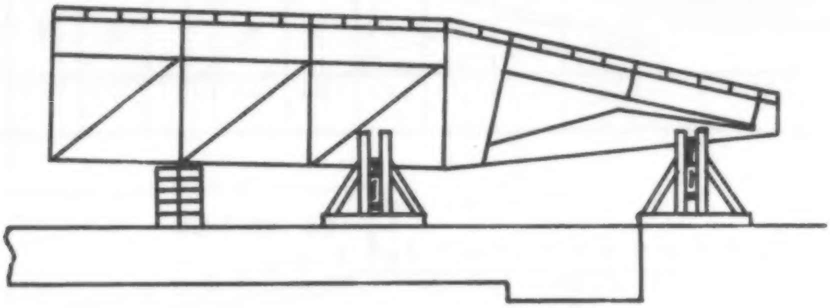


⑧ Jack up RRB.

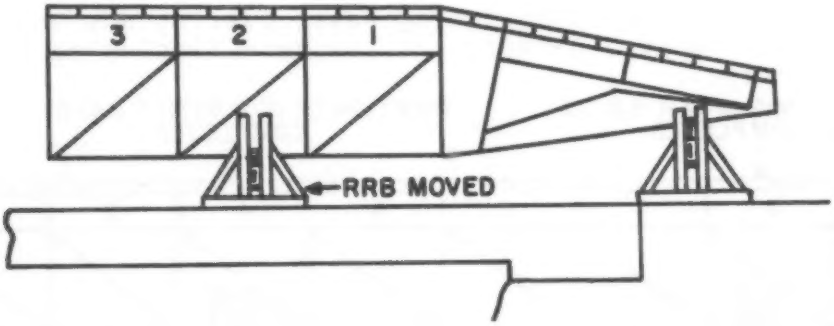


2-35. ASSEMBLY PROCEDURES (Cont).

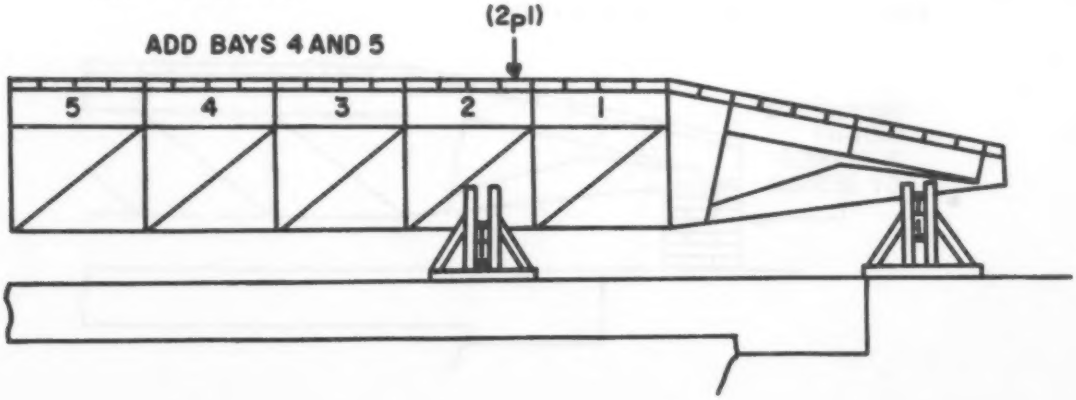
⑨ Place packing under junction between last 2 bays. Lower RRB.



⑩ Move RRB close to packing, jack up RRB, remove packing and lower RRB.



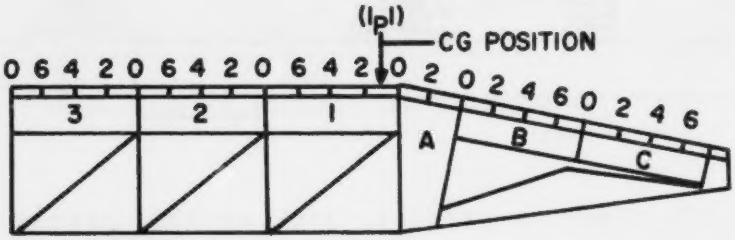
⑪ Add further bays until CG is within 1pp of RRB, or until reactions on baseplates are as much as the existing bridge can sustain.



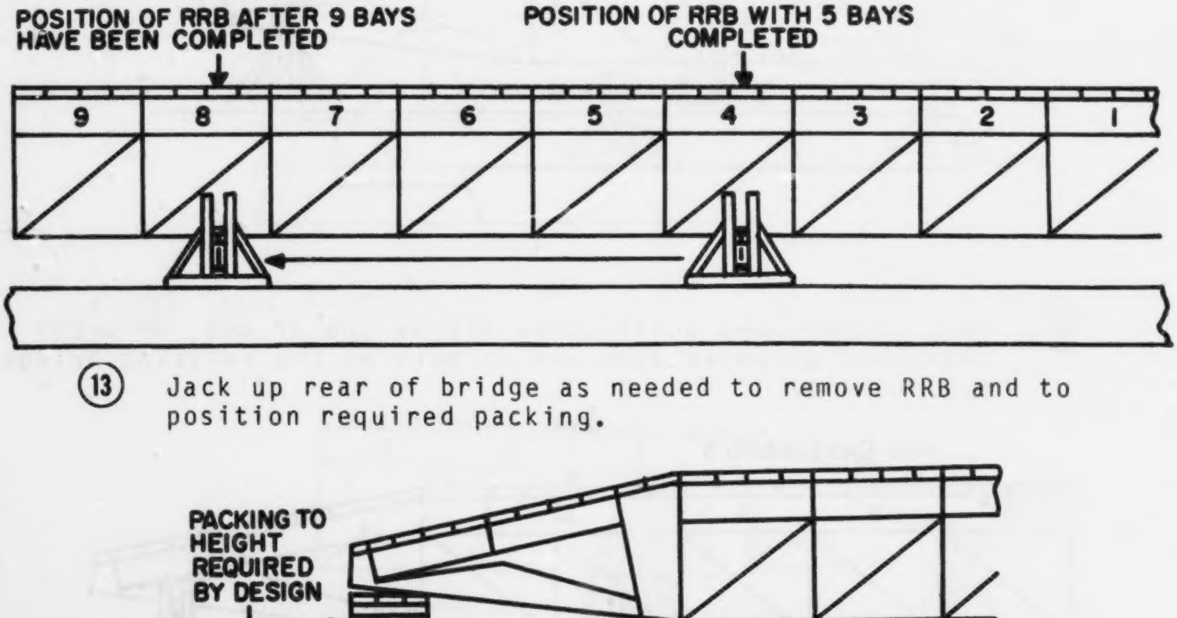
2-35. ASSEMBLY PROCEDURES (Cont).

Table 2-44. CG of Partially Built Bridges Without Launching Noses

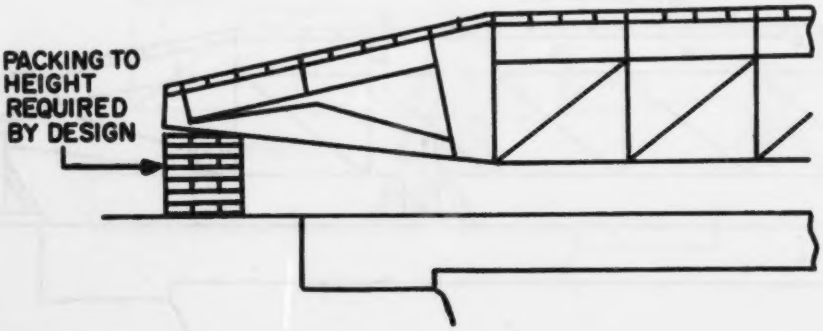
E + No of bridge bays completed	1	2	3	4	5	6	7	8	9	10	11	12
CG Distance	Bp3	Bp0	1p1	1p5	2p1	2p5	3p1	3p5	4p1	4p5	5p1	5p5



⑫ Repeat process of adding bays, packing up, and moving RRB until bridge girders are complete (including end of bridge).

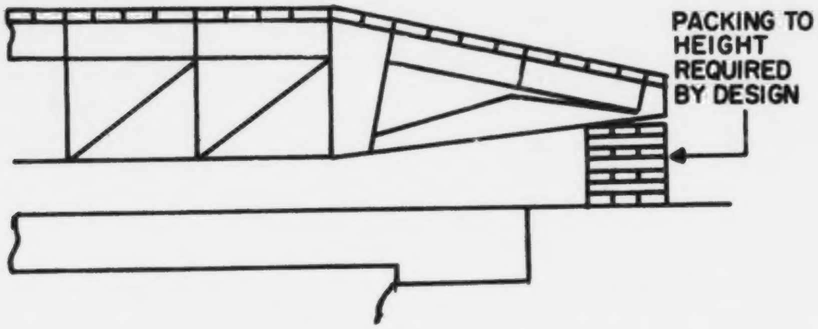

POSITION OF RRB AFTER 9 BAYS HAVE BEEN COMPLETED
POSITION OF RRB WITH 5 BAYS COMPLETED
9
8
7
6
5
4
3
2
1

⑬ Jack up rear of bridge as needed to remove RRB and to position required packing.



2-35. ASSEMBLY PROCEDURES (Cont).

⑭ Repeat (13) for front end of bridge.



⑮ Place ramps, deck, curbs, guide markers, and classification signs.

⑯ Clear site of all erection equipment.

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SECTION VI. ANCHORAGE

	PARAGRAPH	PAGE
Basic Considerations	2-36	2-715
Types of Anchorage	2-37	2-716
Picket Type Installation	2-38	2-716
Approach Guy Installation	2-39	2-717

OVERVIEW

This section provides the information used to determine if anchorage is needed, types of anchorages, and procedures for installation. The components used are listed in Appendixes D and E of this TM.

2-36. BASIC CONSIDERATIONS.

The requirement for anchorage will be determined during site reconnaissance. Factors such as, slope of finished bridge, volume and type of traffic, and bank conditions will be used to determine if anchorage is required.

a. Slope of Finished Bridge. The steeper the slope of the finished bridge, the greater the possibility that anchorage is needed. Consider crossfall of bridge along with slope from end to end. Do not consider the above to mean that completely level bridges will not need anchorages, as the volume and type of traffic and bank conditions must also be considered. Bridges constructed on solid banks or on packing may creep under a high volume of traffic (especialy armored, tracked vehicles). If anchorage is not installed, a bridge should be checked during crossing of traffic for any sign of creeping. If creeping is detected anchorage should be installed.

b. Volume and Type of Traffic. Heavy wheeled and tracked vehicles may cause the bridge to creep. This is the result of impact loads against the end of bridge, and braking/accelerating on the bridge. Control of vehicle approach speed and movement across the bridge will reduce these loads. High volume of medium to heavy vehicles in one direction may cause creeping. Stop vehicles prior to impact on the end of bridge, instruct drivers to maintain a constant safe speed, do not shift gears, and do not make any sudden stops.

c. Bank Conditions. Banks that will allow slow settling of the end of bridge will probably reduce the amount of creeping. Firm, solid banks will increase the need for anchorage.

2-36. BASIC CONSIDERATIONS (Cont).

d. Final Determination. After considering the basic factors, the final determination if anchorage is needed will be made by the bridge commander. If anchorage is not installed, the bridge will be checked regularly for any sign of creeping. If detected, the severity of creeping will be determined, and anchorage will be installed if deemed necessary.

2-37. TYPES OF ANCHORAGE.

a. There are two types of anchorage for MGB. The two types are:

(1) Picket

(2) Approach Guy

b. The picket type consists of pickets driven into the bank along the outside of the bankseat beams. This type of anchorage is used primarily on single story bridges, and can be used on small (2E + 1 thru 2E + 12 bay) double story bridges.

c. The approach guy type consists of anchorage cables attached at the bank end to holdfasts, and to anchorage pins in the bridge at the other end. Two or four cables can be used at each end of single story bridges, and four cables at each end of double story bridges. Use of this anchorage must be determined prior to construction for single story bridges as the anchorage pins can only be inserted during construction.

d. Anchorage installation should not increase building time by more than one half of an hour.

2-38. PICKET TYPE INSTALLATION.

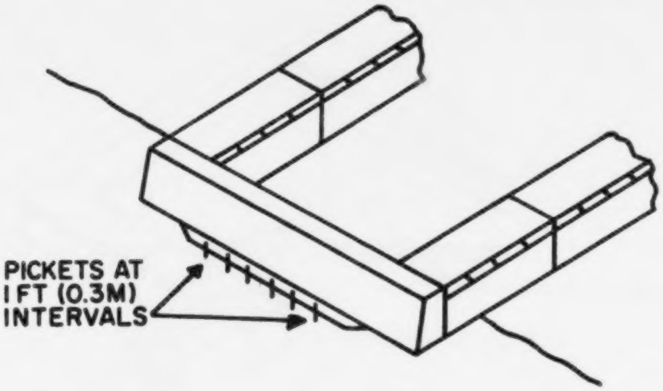
a. Picket type anchorage is installed after the bridge has been put on the ground at both ends, and before ramps are added.

b. During crossing of traffic, check bridge for any sign of creeping.

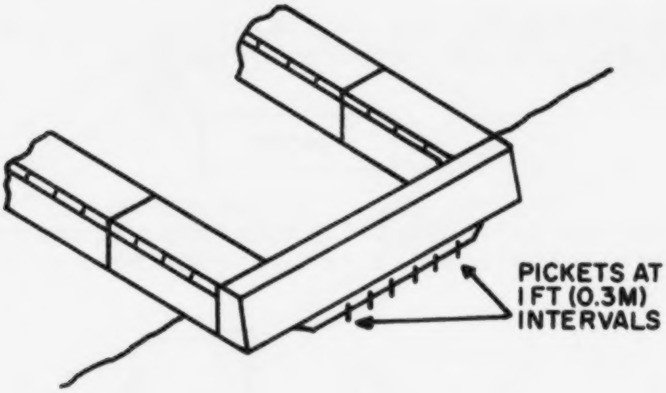
c. Installation

2-38. PICKET TYPE INSTALLATION (Cont).

(1) Use hammer to drive pickets into bank at 1 ft (0.3 m) intervals along the outside edge of near bankseat beam.



(2) Repeat (1) above for far bank bankseat beam.

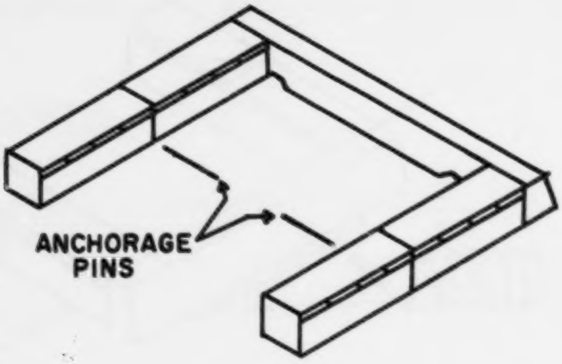


2-39. APPROACH GUY INSTALLATION.

a. For Single Story bridges. During construction anchorage pins will be used in place of panel pins as described in following steps. These procedures are written for the use of two or four cables at each end of bridge. Step (9) can be performed as soon as possible after arrival on site.

2-39. APPROACH GUY INSTALLATION (Cont).

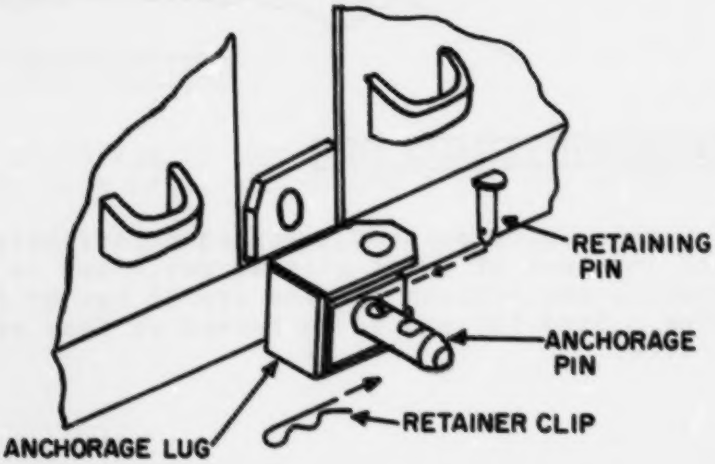
① Insert far bank anchorage pins in junction of first and second bay instead of panel pin. Anchorage pin must be inserted from the inside of bridge.



② Attach anchorage lug to the end of pin, secure with a retaining pin and retainer clip.

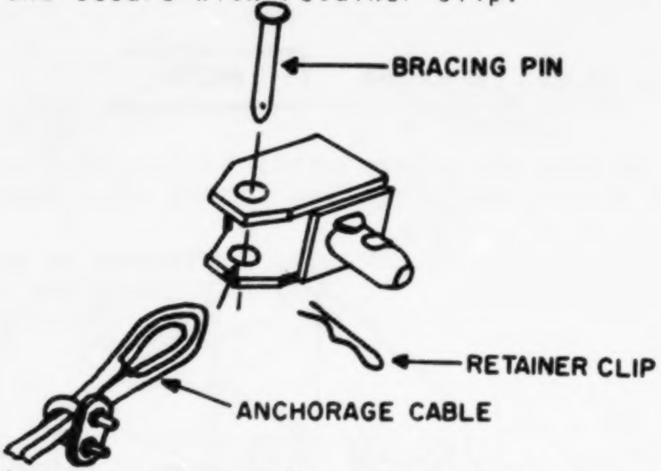
NOTE

Bridge must be boomed until anchorage pin is in front of roller beam before anchorage lug can be attached.

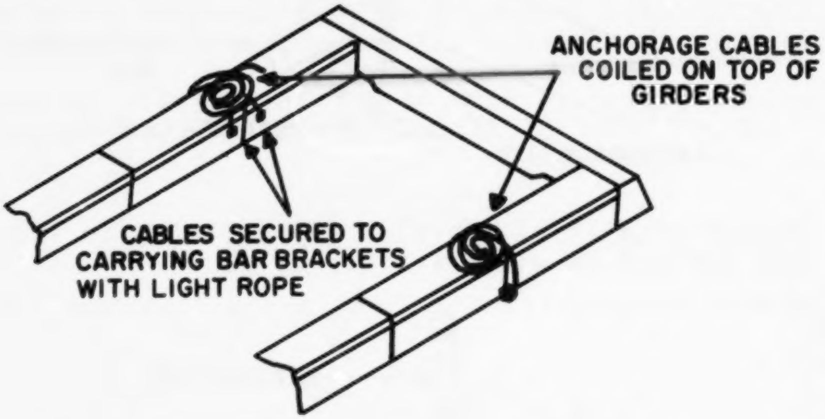


2-39. APPROACH GUY INSTALLATION (Cont).

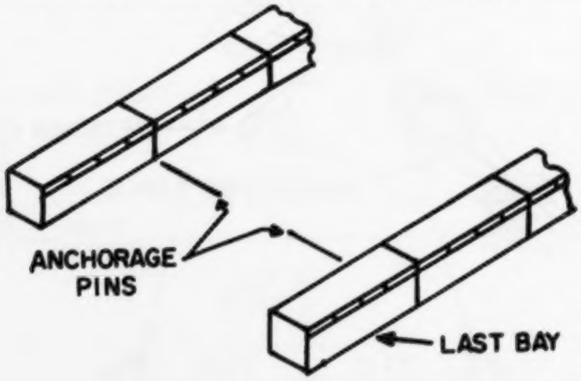
③ Attach loop(s) of approach guy cables(s) to lug(s) with bracing pin and secure with retainer clip.



④ Coil cable(s) on top of panels, secure to carrying bar bracket with light rope.


ANCHORAGE CABLES COILED ON TOP OF GIRDERS
CABLES SECURED TO CARRYING BAR BRACKETS WITH LIGHT ROPE

⑤ Insert near bank anchorage pins in junction of next to last and last bay of bridge instead of panel pin. Anchorage pin must be inserted from inside of bridge.

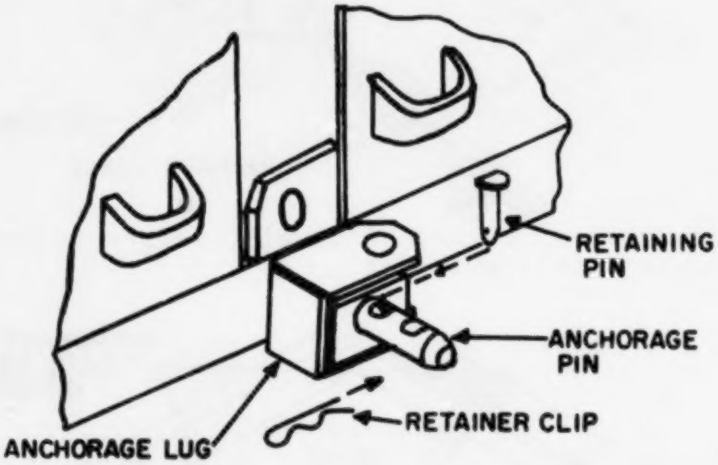


2-39. APPROACH GUY INSTALLATION (Cont).

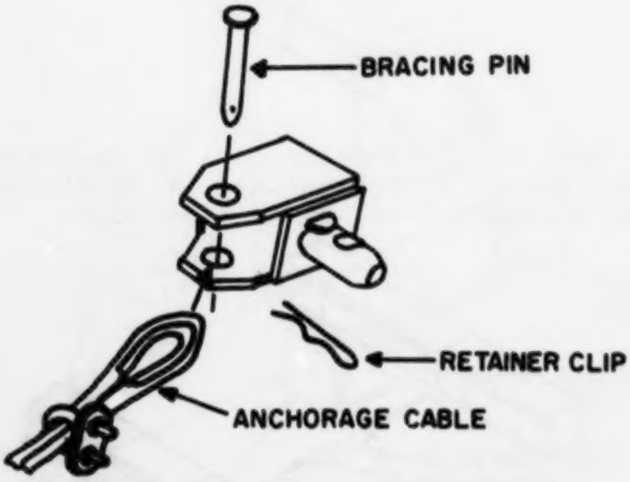
⑥ Attach anchorage lug to the end of pin, secure with a retaining pin and retainer clip.

NOTE

Bridge must be boomed until anchorage pin is in front of roller beam before anchorage lug can be attached.

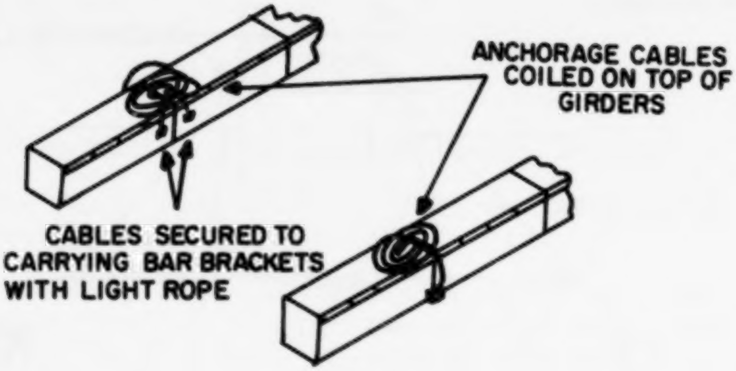


⑦ Attach loop(s) of approach guy cable(s) to lug with bracing pin and secure with retainer clip.



2-39. APPROACH GUY INSTALLATION (Cont).

⑧ Coil cable(s) on top panel.


ANCHORAGE CABLES COILED ON TOP OF GIRDERS
CABLES SECURED TO CARRYING BAR BRACKETS WITH LIGHT ROPE

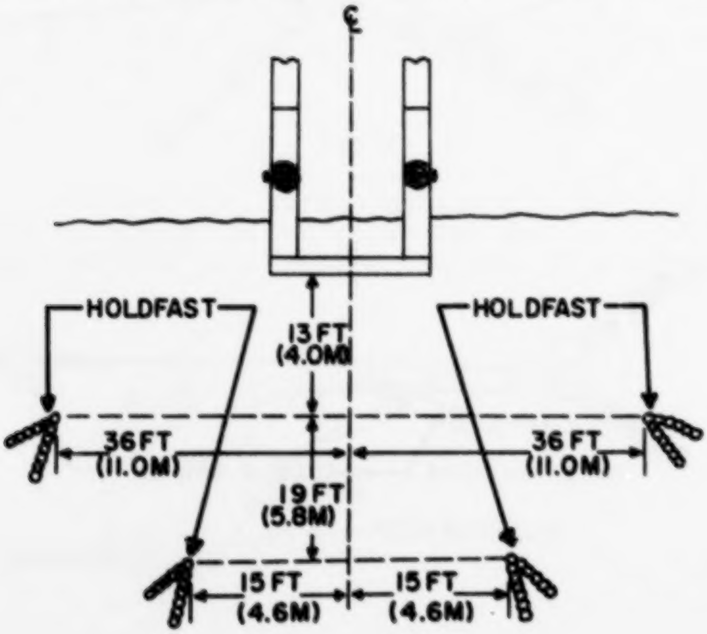
NOTE

The following step could be performed as soon as possible after arrival on site, depending on the availability of personnel.

⑨ Position chain holdfasts on site as shown. Drive nine pickets through links of each holdfast.

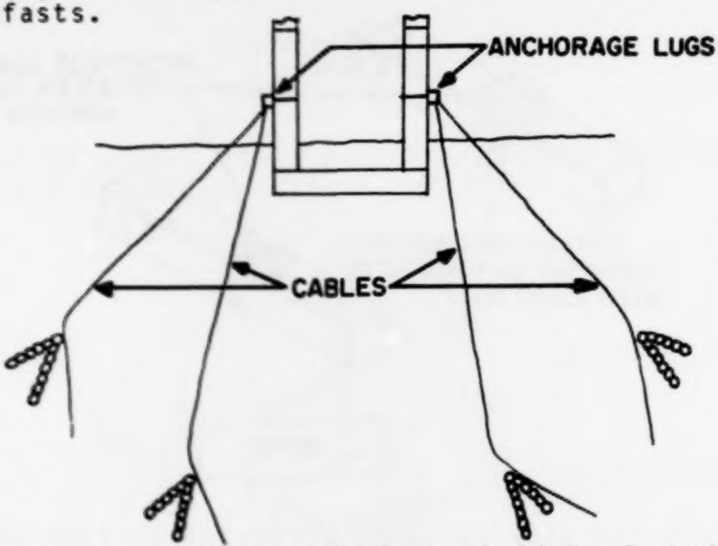
NOTE

When only two cables are used, use position of inside holdfasts.

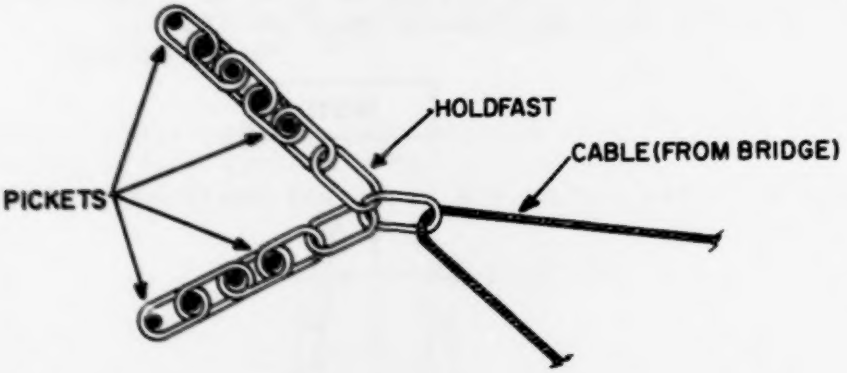


2-39. APPROACH GUY INSTALLATION (Cont).

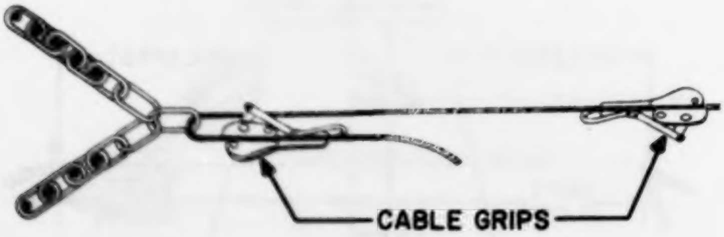
⑩ After bridge is lowered to ground, remove and unroll coil(s) of cable(s) from top panels and stretch out toward holdfasts.



⑪ Feed running end of cable through link of chain holdfast and take up slack by hand.



⑫ Attach cable grips to cables.



2-39. APPROACH GUY INSTALLATION (Cont).

⑬ Attach ratchet chain hoist to cable grips, and operate chain hoist to tension cables.

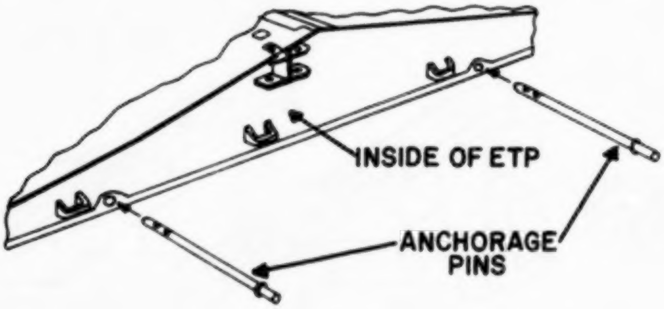
NOTE

Chain hoists must be operated in unison.

⑭ Secure cable with minimum of three cable clips. Remove ratchet chain hoist and cable grips.

b. For Double Story bridges. Anchorage pins will be used in end taper panels for connection of approach guy cables. This type of anchorage is installed during construction, but can, if required, be installed once bridge is put on ground.

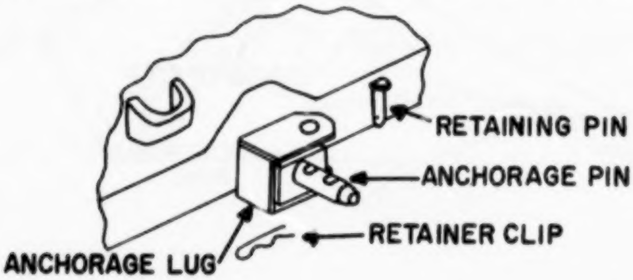
① Insert anchorage pins in anchorage pin holes in end taper panels of far bank end of bridge.



② Attach anchorage lug to the end of each pin, secure with a retaining pin and retainer clip.

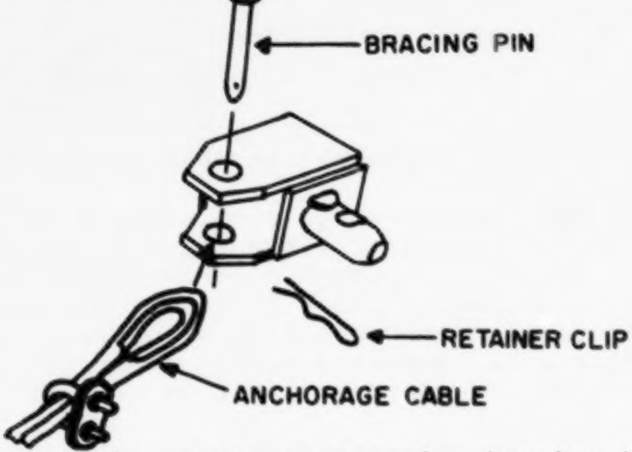
NOTE

Bridge must be boomed until anchorage pin is in front of roller beam nearest edge of gap before lug can be attached.

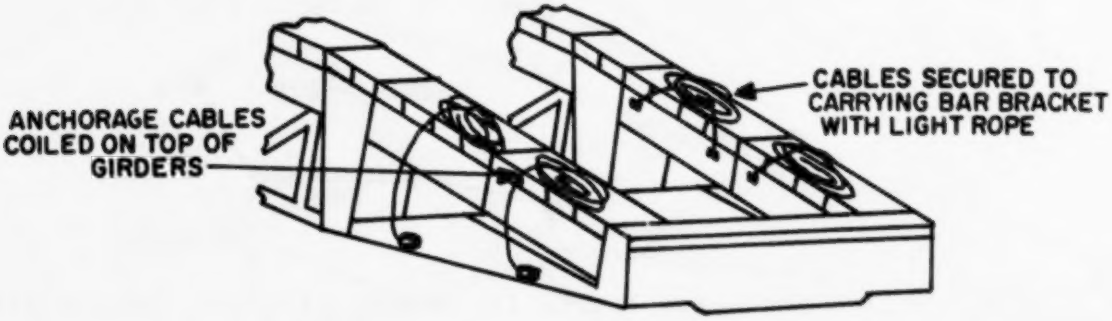


2-39. APPROACH GUY INSTALLATION (Cont).

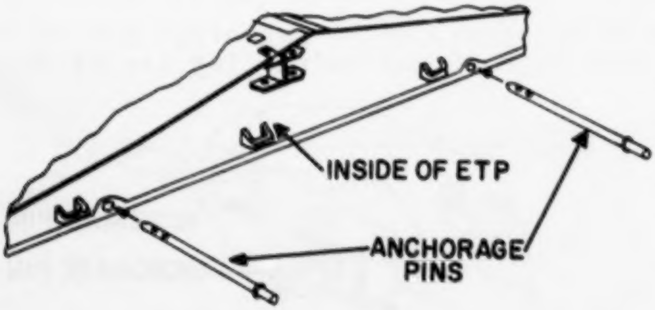
③ Attach loop of approach guy cable to lug with bracing pin and secure with retainer clip.



④ Coil cable on top of panel, secure to carrying bar bracket with light rope.


CABLES SECURED TO CARRYING BAR BRACKET WITH LIGHT ROPE
ANCHORAGE CABLES COILED ON TOP OF GIRDERS

⑤ Insert near bank anchorage pins in anchorage pin holes in end taper panels of far bank end of bridge.

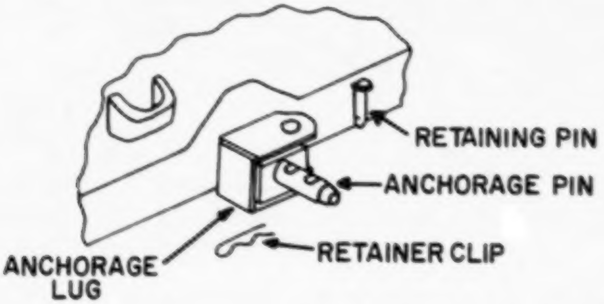


2-39. APPROACH GUY INSTALLATION (Cont).

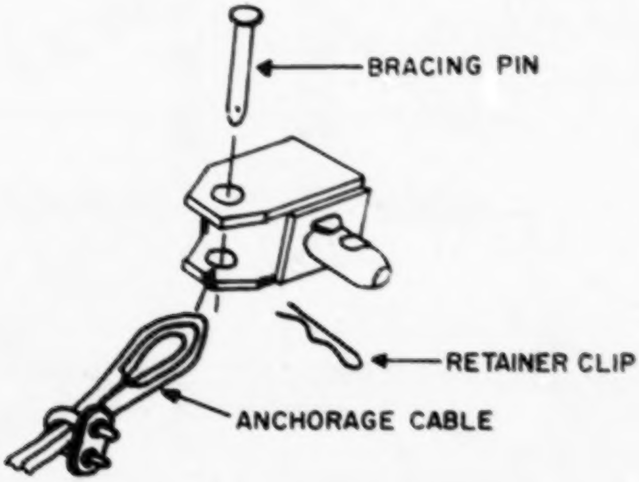
⑥ Attach anchorage lug to the end of each pin, secure with a retaining pin and retainer clip.

NOTE

Bridge must be boomed until anchorage pin is in front of roller beam nearest edge of gap before lug can be attached.

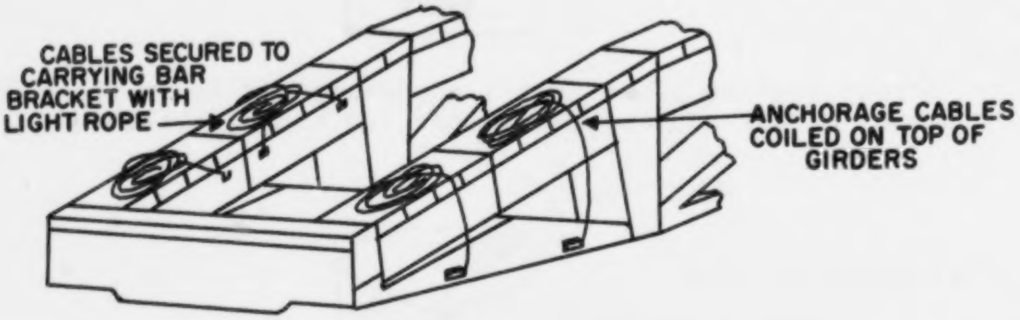


⑦ Attach loop of approach guy cable to lug with bracing pin and secure with retainer clip.



2-39. APPROACH GUY INSTALLATION (Cont).

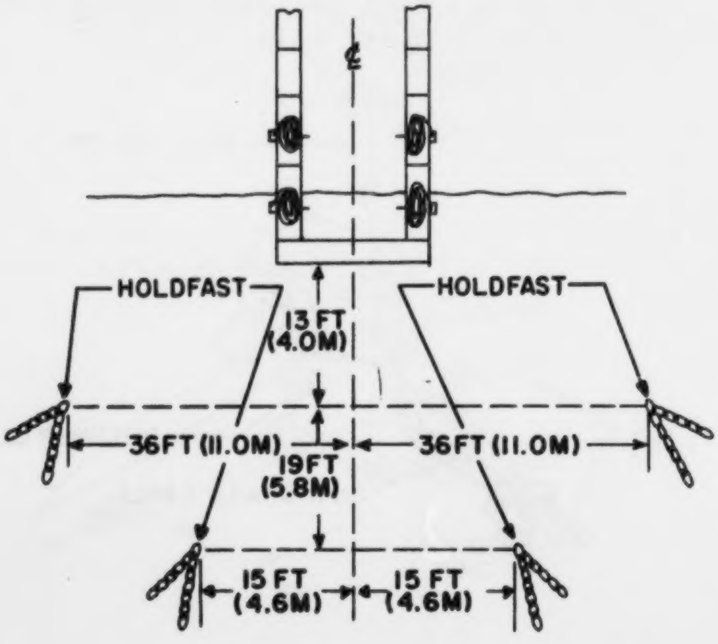
⑧ Coil cable on top of panel, secure to carrying bar bracket with light rope.


CABLES SECURED TO CARRYING BAR BRACKET WITH LIGHT ROPE
ANCHORAGE CABLES COILED ON TOP OF GIRDERS

NOTE

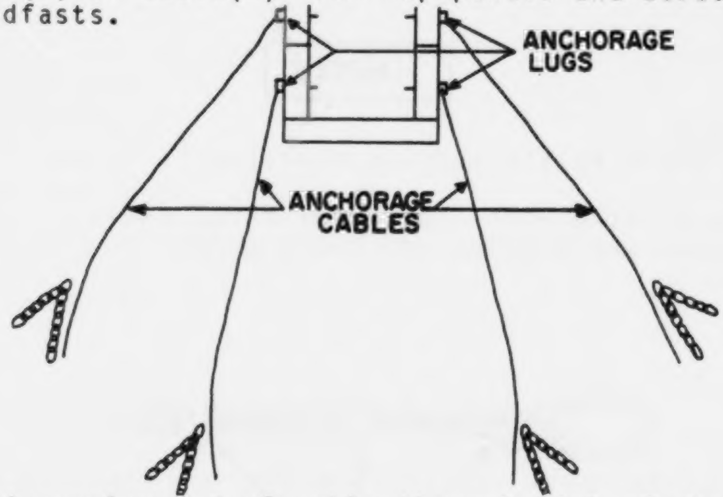
The following step could be performed as soon as possible after arrival on site, depending on the availability of personnel.

⑨ Position chain holdfasts on site as shown. Drive nine pickets through links of each holdfast.

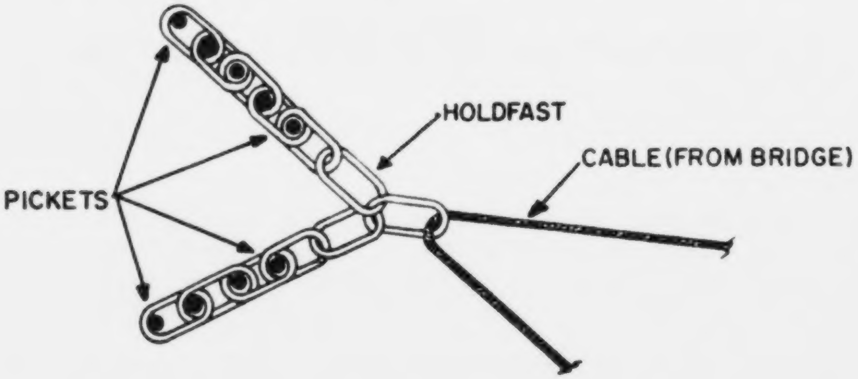


2-39. APPROACH GUY INSTALLATION (Cont).

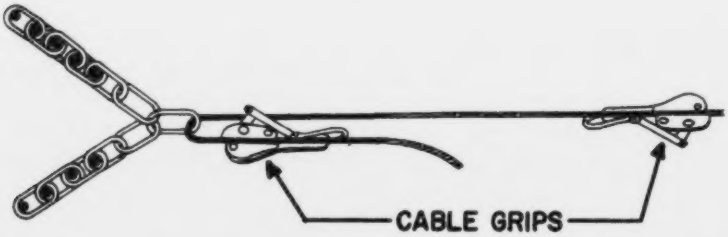
⑩ After bridge is lowered to ground, remove and unroll coil(s) of cable(s) from top panels and stretch out toward holdfasts.



⑪ Feed running end of cable through link of chain holdfast and take up slack by hand.



⑫ Attach cable grips to cable as shown.



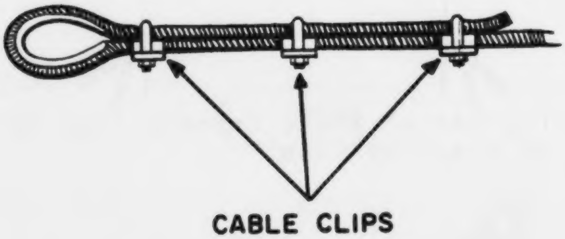
2-39. APPROACH GUY INSTALLATION (Cont).

⑬ Attach ratchet chain hoist to cable grips and operate chain hoist to tension cables.

NOTE

Chain hoists must be operated in unison.

⑭ Secure cable with minimum of three cable clips. Remove ratchet chain hoist and cable grips.



CHAPTER 3
OPERATOR/CREW MAINTENANCE INSTRUCTIONS

	PARAGRAPH	PAGE
Lubrication Instructions	3-1	3-1
General	3-2	3-2
Preventive Maintenance Checks and Services (PMCS)	3-3	3-3
Troubleshooting	3-4	3-7
Maintenance Procedures	3-5	3-24

OVERVIEW

This section contains instructions for lubricating, PMCS, troubleshooting, and maintenance that are the responsibility of the medium girder bridge operator/crew.

SECTION I. LUBRICATION INSTRUCTIONS

3-1. LUBRICATION.

a. Keep all lubricants in closed containers and store in a clean, dry place away from external heat. Do not allow dust, dirt or other foreign material to mix with lubricants. Keep all lubrication equipment clean and ready for use.

b. Keep all external parts not requiring lubrication clean of lubricants. Before lubricating the components, wipe all points to be lubricated free of dirt and grease. Clean all lubrication points after lubricating to prevent accumulation of foreign matter.

c. Detailed lubrication instructions.

(1) M817 Dump Truck. Service the lubricating points at proper intervals as specified in LO9-2320-260-12.

(2) M796 Bolster Trailer. Service the lubricating points at proper intervals as specified in TM 9-2330-287-14.

3-1. LUBRICATION (Cont).

(3) Bridge and Erection Set Components. Lubricate bridge and erection set components as specified below.

Components	Type of Lubricant	Interval
Shoot bolts on:		
Top panel	L.O. MIL-L-7870A*	Semi-annually
Bottom panel	L.O. MIL-L-7870A*	Semi-annually
Bankseat beam	L.O. MIL-L-7870A*	Semi-annually
Junction panel	L.O. MIL-L-7870A*	Semi-annually
Heavy nose section	L.O. MIL-L-7870A*	Semi-annually
Pins (all)	L.O. MIL-L-7870A*	Semi-annually
Hydraulic jack	L.O. MIL-L-7870A	Before use
Levelling screws on:		
Adjustable support	GAA*	Semi-annually
Shoot bolt plunger and spring	GAA	Semi-annually

NOTES:

* Apply light coat of oil and wipe excess off with clean dry cloth.

a. Components to be placed in storage will be maintained with a light coat of lubricant.

b. Hydraulic jacks will be stored in an upright position.

SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

NOTE

Clean the mud from the bridge and ramps when conditions become slippery and muddy, to reduce vehicle slipping during bridge crossings.

3-2. GENERAL.

To ensure that the Medium Girder Bridge (MGB) is ready for operation at all times, it must be inspected systematically so that the defects may be discovered and corrected before they result in serious damage or failure. Defects discovered during operation of the unit shall be noted for future corrections, to be made as soon as an operation has ceased. Stop operation that would damage equipment if opera-

3-2. GENERAL (Cont).

tion were to continue. All deficiencies and shortcomings shall be reported together with corrective action taken on DA Form 2404, Equipment Inspection and Maintenance Worksheet, at the earliest opportunity. When performing before operation (B) and during operation (D) PMCS, always keep in mind CAUTIONS and WARNINGS. After operation, be sure to plerform (A) PMCS. If equipment fails to operate, troubleshoot with proper equipment. Report deficiencies using the proper forms, see TM 38-750.

3-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

Refer to table 3-1 for Preventive Maintenance Checks and Services.

a. Item Number Column. Checks and Services are numbered in chronological order regardless of interval. This column will be used as a source of item numbers for the TM item number column on DA Form 2404 in recording results of PMCS.

b. Interval Columns. Columns headed B, D, A, W, and M will contain a dot (o) opposite appropriate check indicating it to be performed before, during, after, weekly, or monthly.

c. Items to be Inspected Column. Items listed in this column are divided into groups and identifies items to be inspected.

d. Procedures Column. This column contains a brief description of the procedure by which the check is to be performed.

e. For Readiness Reporting, Equipment Is Not Ready/Available If Column. This column contains criteria which causes the equipment to be classified as not ready/available because of inability to perform its primary mission.

NOTE

- If you are operating the equipment for the first time, perform W checks as well as B checks.
- If equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make complete checks and services when equipment can be closed to traffic.

3-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont).

Table 3-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

NOTE: Within designated interval, these checks are to be performed in the order listed.

B - Before
D - During
A - After
W - Weekly
M - Monthly

Item	Interval					Item to be inspected	PROCEDURES Check for and have repaired or adjusted as necessary.	Equipment Is not ready/ Available if:
No.	B	D	A	W	M			
1		●				Medium Girder Bridge	Evidence of damage and security of installation.	
						Bridge Components:		
2		●				Curb	Cracks and breaks.	
3		●				Guide Marker	Cracks and breaks. Missing plastic panel.	
4		●				Deck Units	Cracks, broken or bent connectors and lugs.	Cracks or breaks in the connector area.
5		●				Ramp Units	Cracks, broken or bent connectors, brackets and stacking lugs.	Cracks or breaks in the connector area.
6		●				Bankseat Beam	Cracked, broken or bent pin jaws, shoot bolts, compression bushings, guide slots, carrying bar brackets jack post and center brackets.	Cracks or breaks in the pin jaws.
7		●				End Taper Panels	Cracked, broken, or bent pin jaws, compression bushings, guide slots, carrying bar and sway brace brackets.	Cracks or breaks in the pin jaws.

3-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont).

Table 3-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont).

B - Before
D - During · A - After
W - Weekly · M - Monthly

Item No.	Interval					Item to be inspected	PROCEDURES Check for and have repaired or adjusted as necessary.	Equipment Is not ready/ Available if:
	B	D	A	W	M			
8		●				Junction Panels	Cracked, broken or bent pin jaws, compression bushings, guide slots, carrying bar brackets, shoot bolts and launching nose cross girder post lugs.	Cracks or breaks in the pin jaws.
9		●				Pins	Cracked, broken, bent or burred pins.	
10		●				Top Panels	Cracked, broken, or bent pin jaws, compression bushings, guide slots, carrying bar brackets and shoot bolts.	Cracks or breaks in the pin jaws.
11		●				Bottom Panels	Cracked, broken or bent pin jaws, compression bushings, guide slots, carrying bar brackets, sway brace brackets, shoot bolts and stacking lugs.	Cracks or breaks in the pin jaws.
12		●				Sway Braces	Cracked, broken or bent connectors.	
13		●				Bridge Erection Components:	Evidence of damage and security of installation.	
14		●				Nose sections	Cracked, broken or bent pin jaws, compression bushings, guide slots, carrying bar brackets and shoot bolts.	

3-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont).

Table 3-1. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont).

B - Before
D - During
A - After
W - Weekly
M - Monthly

Item No.	Interval					Item to be inspected	PROCEDURES Check for and have repaired or adjusted as necessary.	Equipment Is not ready/ Available if:
	B	D	A	W	M			
15		●				Rollers	Cracked, broken or binding rollers.	
16		●				Girders	Cracked, broken or bent connectors and brackets.	
17		●				Push Bars	Cracks and breaks "Other Side Up" stenciled on bottom of push bar.	
18		●				Hydraulic Jacks	Cracks, breaks or leaks.	Will not lift or leaks badly.
19		●				Jack Post	Cracks and breaks.	
20		●				Pallets and Adapters	Cracks, breaks and missing hardware.	

SECTION III. TROUBLESHOOTING

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES.

a. The table lists the common malfunctions which you may find during the operation or maintenance of the floodlight set or its components. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

c. Refer to TM 9-2320-260-10 to troubleshoot the M817 Truck.

d. Refer to TM 9-2330-287-14 to troubleshoot the M796 Trailer.

e. Be sure that your Preventive Maintenance Checks and Services has been applied before troubleshooting.

SYMPTOM INDEX

	TROUBLESHOOTING PROCEDURE	
	MALFUNCTION ITEM NO.	PAGE
TOP PANEL	1.	3-9
RAMP UNIT		
Will Not Connect	2.	3-10
Lifts When Traffic Crosses	3.	3-10
Impact Damage	4.	3-11
DECK UNIT		
Will Not Seat	5.	3-11
Impact Damage	6.	3-11
CURB		
Will Not Connect	7.	3-11
Impact Damage	8.	3-12
SWAY BRACE	9.	3-12

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

SYMPTOM INDEX (Cont)

	TROUBLESHOOTING PROCEDURE	
	MALFUNCTION ITEM NO.	PAGE
BOTTOM PANEL	10.	3-13
END TAPER PANEL	11.	3-14
JUNCTION PANEL	12.	3-15
BANKSEAT BEAM	13.	3-16
PINS	14.	3-18
LAUNCHING NOSE SECTIONS	15.	3-18
ROLLERS (In Roller Beam, Nose Roller, Nose Cross Girder, and Landing Roller)	16.	3-19
LAUNCHING NOSE ROLLER	17.	3-19
LAUNCHING NOSE CROSS GIRDER POST	18.	3-20
LAUNCHING NOSE CROSS GIRDER	19.	3-20
ADJUSTABLE SUPPORT (Support Pins)	20.	3-20
FRAME CROSS GIRDER	21.	3-21
ROLLER BEAM (Jack Hoods)	22.	3-21
JACK POSTS	23.	3-22
JACK SUPPORTS	24.	3-22
FIXED SUPPORT	25.	3-22
PUSH BAR ADAPTER	26.	3-22
PUSH BAR	27.	3-23
PUSH BAR CROSS GIRDER	28.	3-23

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. TOP PANEL WILL NOT CONNECT TO ANOTHER PANEL OR BANKSEAT BEAM.

Step 1. Ensure that shoot bolts are unlocked.

Unlock shoot bolts.

WARNING

Do not insert fingers between components or into pin holes to check for or to remove obstructions. Serious injury may occur.

Step 2. Visually check for obstructions (dirt, rocks, ice) in shoot bolt well, dowel socket or pin jaws.

Step 3. Check for burred or gouged areas on:

dowels
shoot bolts
butting surfaces
shoot bolts handle slot
compression bushings
guide slots
pin jaws

Use file to remove burrs or edge

Step 4. Check for bent or distorted compression bushing.

Replace bushing.

Step 5. Check for bent shoot bolt.

Replace shoot bolt.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

1. (Cont)

Step 6. If top panel still will not connect to other component.

Replace top panel. Report condition to Organizational Maintenance.

---

2. RAMP UNIT WILL NOT SEAT IN RAMP SHELF OF BANKSEAT BEAM.

Step 1. Visually inspect for obstructions (dirt, rocks, ice) in ramp shelf and ramp hook.

Separate components and clear obstructions.

Step 2. Check for burred or gouged areas on ramp shelf and ramp hook.

Use file to remove burrs or edge of gouged areas.

Step 3. If ramp still will not seat.

Replace ramp. Report condition to Organizational Maintenance.

---

3. RAMP LIFTS WHEN TRAFFIC CROSSES BRIDGE.

Step 1. Check ramp for correct installation.

Install ramp correctly.

Step 2. Check for missing anti-lift lug on ramp or bankseat.

If lug is missing from ramp unit, replace ramp. If lug is missing from bankseat beam, watch ramp to ensure that it does not come off during crossing of traffic.

In either case, after operation, report condition to Organizational Maintenance.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

3. (Cont)

Step 3. If ramp unit still lifts during crossing of traffic.

Replace ramp. Report condition to Organizational Maintenance.

4. RAMP UNIT IMPACT DAMAGE.

Step 1. Inspect ramp to determine extent of damage.

Replace ramp. Report condition of damaged ramp to Organizational Maintenance.

5. DECK UNIT WILL NOT SEAT IN DECK UNIT RECESS OF PANEL.

Step 1. Visually check for obstruction (dirt, rocks, ice) in recess or rail hook.

Clear obstructions.

Step 2. Inspect rail hook of deck unit for damage.

Replace deck unit. Report condition of damaged deck to Organizational Maintenance.

6. DECK UNIT IMPACT DAMAGE.

Step 1. Inspect deck to determine extent of damage.

Replace deck unit. Report condition of damaged deck to Organizational Maintenance.

7. CURB WILL NOT CONNECT TO TOP PANEL.

Step 1. Visually inspect for obstructions (dirt, rocks, ice) in recess of top panel.

Clear obstructions.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

7. (Cont)

Step 2. Inspect curb for bent or damaged rail hook or support blocks.

Replace curb. Report condition of damaged curb to Organizational Maintenance.

---

8. CURB IMPACT DAMAGE

Step 1. Inspect curb to determine extent of damage.

Replace curb. Report condition of damaged curb to Organizational Maintenance.

---

9. SWAY BRACE WILL NOT CONNECT TO BANKSEAT BEAM, BOTTOM OR END TAPER PANEL.

Step 1. Ensure that roller beams are on same horizontal plane.

Level roller beams or position beams on same plane.

Step 2. Check girder spacing.

Move girders of bridge side to side.

Step 3. Inspect sway brace ends for burrs or gouged areas.

Use file to remove burrs or edge of gouged areas.

Step 4. Inspect sway brace brackets for burrs or gouged areas.

Use file to remove burrs or edge of gouged areas.

Step 5. If sway brace still will not connect.

Replace sway brace. Report condition to Organizational Maintenance.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

10. BOTTOM PANEL WILL NOT CONNECT TO TOP, JUNCTION OR ANOTHER BOTTOM PANEL.

Step 1. Ensure that upper shoot bolts are unlocked.

Unlock shoot bolts.

WARNING

Do not insert fingers between components or into pin holes to check for or to remove obstructions. Serious injury may occur.

Step 2. Visually check for obstructions (dirt, rocks, ice) in pin jaws.

Separate components and clear obstructions.

Step 3. Check for burred or gouged areas on:

- pin jaws (upper and lower)
- compression bushings
- guide slots

Use file to remove burrs or edge of gouged areas.

Step 4. Check for bent or distorted compression bushing.

Replace bushing.

Step 5. If bottom panel still will not connect to other component.

Replace bottom panel. Report condition to Organizational Maintenance.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

11. END TAPER PANEL WILL NOT CONNECT TO BANKSEAT BEAM OR JUNCTION PANEL.

Step 1. Ensure that roller beams are on same horizontal plane.

Level roller beams or position beams on same plane.

WARNING

Do not insert fingers between components or into pin holes to check for or to remove obstructions. Serious injury may occur.

Step 2. Visually check for obstructions (dirt, rocks, ice) in pin jaws.

Separate components and clear obstructions.

Step 3. Check for burred or gouged areas on:

pin jaws
compression bushings
guide slots

Use file to remove burrs or edge of gouged areas.

Step 4. Check for bent or distorted compression bushing.

Replace bushing.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

11. (Cont)

Step 5. If end taper panel still will not connect to other component.

Replace end taper panel. Report condition to Organizational Maintenance.

---

12. JUNCTION PANEL WILL NOT CONNECT TO TOP, END TAPER OR BOTTOM PANEL.

Step 1. Ensure that roller beams are on same horizontal plane.

Level roller beams or position beams on same plane.

Do not insert fingers between components or into pin holes to check for or to remove obstructions. Serious injury may occur.

Step 2. Visually check for obstructions (dirt, rocks, ice) in pin jaws, shoot bolt wells or dowel sockets.

Separate compnents and clear obstruction.

Step 3. Ensure that pin pack is correctly placed on pin stops of end taper panel.

Place pin pack on stops.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

12. (Cont)

Step 4. Check for burred or gouged areas on:

pin jaws
compression bushings
guide slots

Use file to remove burrs or edge of gouged areas.

Step 5. Check for bent or distorted compression bushing.

Replace bushing.

Step 6. If junction panel still will not connect to other component.

Replace junction panel. Report condition to Organizational Maintenance.

---

13. BANKSEAT BEAM WILL NOT CONNECT TO TOP OR END TAPER PANEL.

Step 1. Ensure that roller beams are on same horizontal plane.

Level roller beams or position beams on same plane.

WARNING

Do not insert fingers between components or into pin holes to check for or to remove obstructions. Serious injury may occur.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

13. (Cont)

Step 2. Visually check for obstructions (dirt, rocks, ice) in pin jaws, shoot bolt walls or dowel sockets.

Separate components and clear obstruction.

Step 3. Check for burred or gouged areas on:

dowels
shoot bolts
butting surfaces
shoot bolt handle slot
compression bushings
guide slots
pin jaws

Use file to remove burrs or edge of gouged areas.

Step 4. Check for bent or distorted compression bushing.

Replace bushing.

Step 5. Check for bent shoot bolt.

Replace shoot bolt.

Step 6. If bankseat beam still will not connect to other component.

Replace beam. Report condition to Organizational Maintenance.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

14. PINS WILL NOT SEAT COMPLETELY IN PIN JAWS.

WARNING

Do not insert fingers between components or into pin holes to check for or to remove obstructions. Serious injury may occur.

Step 1. Visually check for obstructions (dirt, rocks, ice) in pin jaws.

Step 2. Check for burred or gouged pins.

Use file to remove burrs or edge of gouged area.

Step 3. If pin still will not seat.

Replace pin. Report condition to Organizational Maintenance.

---

15. LAUNCHING NOSE SECTIONS WILL NOT CONNECT TO ANOTHER NOSE SECTION OR BANKSEAT BEAM.

Step 1. Visually check for obstructions (dirt, rocks, ice) in pin jaws, shoot bolt wells or dowel sockets.

Step 2. Check for burred or gouged areas on:

lugs
dowels
pin jaws
shoot bolt handle slot
compression bushings
guide slots
butting surfaces

Use file to remove burrs or edge of gouged areas.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

15. (Cont)

Step 3. Check for bent or distorted compresison bushing.

Replace bushing.

Step 4. Check for bent shoot bolt.

Replace shoot bolt.

Step 5. If nose section still will not connect to other component.

Replace nose section. Report condition to Organizational Maintenance.

---

16. ROLLERS IN ROLLER BEAM, LAUNCHING NOSE ROLLER, LAUNCHING NOSE CROSS GIRDER AND LANDING ROLLER WILL NOT TURN.

Step 1. Ensure roller catch is unlocked in roller beam.

Unlock roller catch.

Step 2. Inspect rollers for damage.

Replace component that roller is a part of. DO NOT REPLACE ROLLER.

Report condition to Organizational Maintenance.

---

17. LAUNCHING NOSE ROLLER WILL NOT CONNECT TO BANKSEAT BEAM.

Step 1. Visually check for obstructions (dirt, rock, ice) in ramp shelf of beam.

Clear obstruction.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

17. (Cont)

Step 2. If nose roller still will not connect to bankseat beam.

Replace nose roller. Report condition to Organizational Maintenance.

---

18. LAUNCHING NOSE CROSS GIRDER POSTS WLL NOT CONNECT TO TOP OR BOTTOM PANEL.

Step 1. Check for burred or gouged areas on lugs.

Use file to remove burrs or edge of gouged areas.

Step 2. If posts still will not connect to panels.

Replace post. Report condition to Organizational Maintenance.

---

19. LAUNCHING NOSE CROSS GIRDER WILL NOT ATTACH TO POST.

Step 1. Check for burred or gouged areas on pin jaws.

Use file to remove burrs or edge of gouged area.

Step 2. If girder still will not attach to post.

---

20. ADJUSTABLE SUPPORT SUPPORT PINS WILL NOT SEAT IN SUPPORT PIN HOLES.

Step 1. Check for burred pin hole or pin.

Use file to remove burrs.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

20. (Cont)

Step 2. If pin still will not seat.

Replace pin. Report condition to Organizational Maintenance.

---

21. FRAME CROSS GIRDER WILL NOT CONNECT TO ADJUSTABLE SUPPORT.

Step 1. Check for burred or gouged

lugs
bushings
hooks

Use file to remove burrs or edge of gouged areas.

Step 2. If girder still will not connect.

Replace girder. Report condtion to Organizational Maintenance.

---

22. ROLLER BEAM JACK HOODS WILL NOT MOVE TO UP POSITION.

Step 1. Ensure that roller catch is locked.

Lock roller catch.

Step 2. Ensure that fixed pins are pushed out.

Push pins out.

Step 3. If hood still will not move to up position.

Replace roller beam. Report condition to Organizational Maintenance.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

23. JACK POSTS WILL NOT CONNECT TO BANKSEAT BEAM.

Step 1. Check for obstructions (dirt, rocks, ice) in jack post bracket and ramp shelf of bankseat beam.

Clear obstruction.

Step 2. Check for burred or gouged ramp shelf.

Use file to remove burrs or edge of gouged area.

Step 3. Inspect weld on nose pin bushing. If weld has broken, the nose bushing will slide in and out.

Position nose pin bushing so equal amoumt of bushing extends out of both sides of post.

Step 4. If post still will not connect.

Replace post. Report condition to Organizational Maintenance.

24. JACK SUPPORTS WILL NOT CONNECT TO BASEPLATES.

Replace support. Report condition to Organizational Maintenance.

25. FIXED SUPPORT WILL NOT CONNECT TO BASEPLATE.

Replace support. Report condition to Organizational Maintenance.

26. PUSH BAR ADAPTER WILL NOT CONNECT TO BUMPER OF TRUCK.

Step 1. Ensure that bumper of truck is not bent.

3-4. OPERATOR'S TROUBLESHOOTING PROCEDURES (Cont).

Table 3-2. OPERATOR/CREW TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

26. (Cont)

Step 2. If adapter still will not connect to bumper.

Replace adapter. Report condition to Organizational Maintenance.

27. PUSH BAR WILL NOT CONNECT TO ADAPTER, BANKSEAT BEAM OR CROSS GIRDER.

Replace pushbar. Report condition to Organizational Maintenance.

28. PUSH BAR CROSS GIRDER WILL NOT CONNECT TO PANELS.

Step 1. Ensure that girders of bridge are on same horizontal plane.

Level roller beams.

Step 2. Check for burred or gouged areas on ends of girder.

Use file to remove burrs or edge of gouged areas.

Step 3. If girder still will not connect.

Replace girder. Report condition to Organizational Maintenance.

SECTION IV. MAINTENANCE PROCEDURES

3-5. MAINTENANCE PROCEDURES.

a. The operator/crew is responsible for inspection and repair by replacement all major bridge and erection set components (complete assemblies).

EXAMPLE: Operator/crew inspects a top panel and finds a bent shoot bolt housing (which will prevent panel from connecting to another panel).

To repair this component, the operator refers the top panel to organizational maintenance.

b. Some components (with defective sub-assemblies) can be repaired by replacement at operator/crew level.

EXAMPLE: Operator/crew inspects a top panel and finds a bent shoot bolt handle (which will prevent panel from connecting to another panel).

To repair this component, the operator removes the bent handle and replaces it with another handle.

c. The extent of maintenance that can be performed at operator/crew level is restricted to replacement and servicing of component sub-assemblies such as:

shoot bolts and handles
compression bushings
chain and pin assemblies
removal of burrs of components
cleaning and lubricating pins, shoot bolts, and levelling screws
spot painting and marking of components

d. Procedures for removal and repair by replacement of sub-assemblies follow.

TASK	PROCEDURES	PAGE
(1)	Shoot bolt (adjustable support) - removal, service/repair and installation)	3-26
(2)	Shoot bolt (bankseat beam, heavy nose sections, top and junction panels) - removal, service/repair and installation	3-30

3-5. MAINTENANCE PROCEDURES (Cont).

TASK	PROCEDURES	PAGE
(3)	Shoot bolt (bottom panel) - removal, service/repair and installation	3-34
(4)	Compression bushing (bankseat beam, heavy nose sections, top, bottom, junction and end taper panels) - removal, service/repair and installation	3-41
(5)	Pins and chains (launching nose cross girder and adjustable support) - removal, service/repair and installation	3-45
(6)	Chains and pins (adjustable support) - removal, service/repair and installation	3-48
(7)	Levelling screw (adjustable support) - removal, service/repair and installation	3-51
(8)	Hydraulic jack - service	3-53

3-5. MAINTENANCE PROCEDURES (Cont).

(1). SHOOT BOLT (ADJUSTABLE SUPPORT).

This task covers:

a. Removal b. Service/Repair c. Installation

INITIAL SETUP

Materials/Parts

Clean Cloths
Lubricating Oil (MIL-L-7870A)

Condition Description

Shoot bolt in component
Component on raised flat surface (outside of support facing up).

Tools

8 inch pliers or visegrips
4 inch cross tip screw driver
6 inch flat file

Personnel Required

MOS 12C Bridge Crewman/Specialist

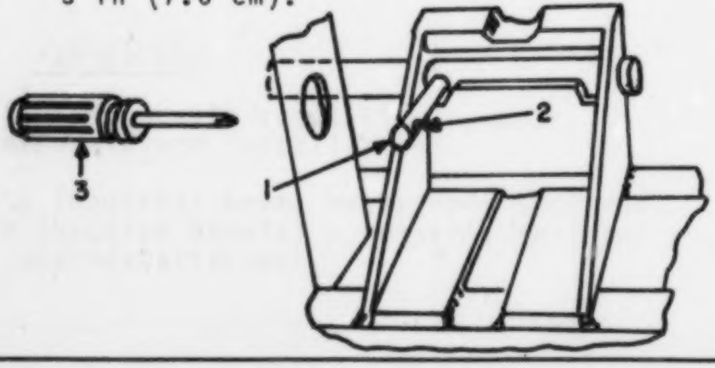
LOCATION/ITEM ACTION REMARKS

NOTE

Two types of shoot bolt handles are used. One type has a 3/16 in (7mm) diameter hole through the unthreaded end. The other type does not have a hole through it.

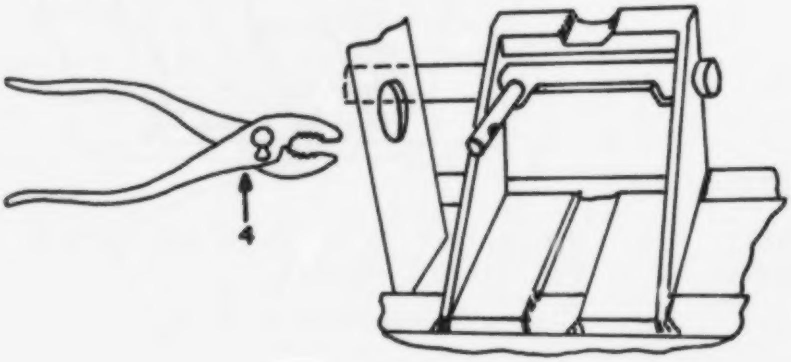
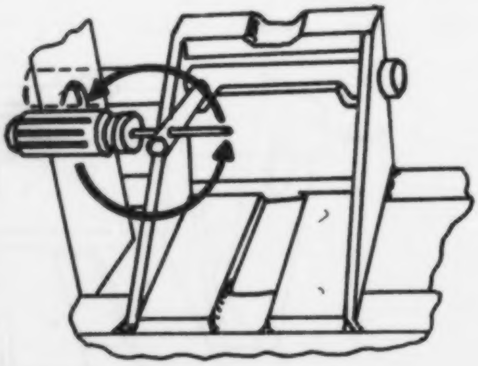
REMOVAL

1. Shoot bolt handle (1) a. If handle (1) has a hole (2) in it, insert the screwdriver (3) through the hole at least 3 in (7.6 cm).



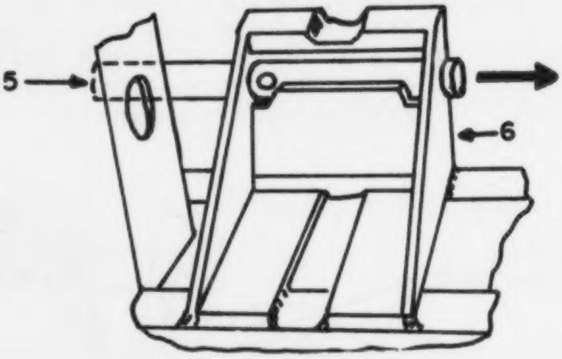
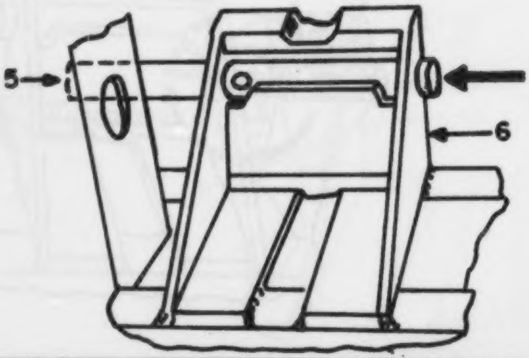
3-5. MAINTENANCE PROCEDURES (Cont).

(1). SHOOT BOLT (ADJUSTABLE SUPPORT) (Cont).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
	b. If handle (1) does not have a hole in it, using the pliers/visegrips (4) grasp the handle as close to the threaded end as is possible. Use a piece of cloth between teeth of pliers/visegrips and handle to reduce burring handle. 	
	c. Loosen and remove handle (1) by turning handle with screw-driver (3) or pliers/visegrips (4) in a counterclockwise motion. 	

3-5. MAINTENANCE PROCEDURES (Cont).

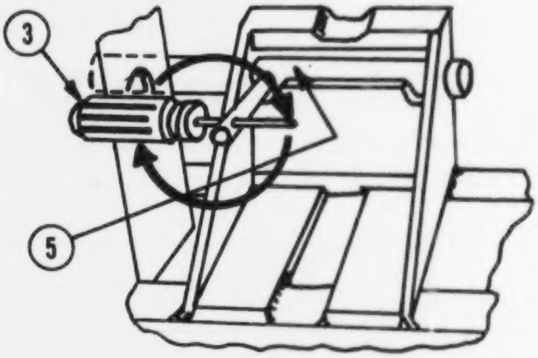
(1). SHOOT BOLT (ADJUSTABLE SUPPORT) (Cont).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
2. Shoot bolt (5)	After handle has been removed, shoot bolt (5) can be slid out of housing (6).  	
SERVICE/REPAIR		
3. Shoot bolt and handle	a. Visually inspect bolt and handle for burred areas. b. Remove burrs with a file. c. Clean shoot bolt and handle with an oil soaked cloth. d. Wipe dry with a clean dry cloth.	
INSTALLATION		
4. Shoot bolt (5)	Insert shoot bolt (5) into housing (6) until handle hole (7) is inside of housing. Hold shoot bolt in place.  	

3-5. MAINTENANCE PROCEDURES (Cont).

(1). SHOOT BOLT (ADJUSTABLE SUPPORT) (Cont).

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont).		
5. Shoot bolt handle (1)	a. Insert handle into shoot bolt (5) and turn handle clockwise by hand.	
	b. Tighten with screwdriver (3) or pliers/visegrips (4).	



3-5. MAINTENANCE PROCEDURES (Cont).

(2) SHOOT BOLT (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP AND JUNCTION PANELS)

This task covers:

a. Removal b. Service/Repair c. Installation

INITIAL SETUP

Materials/Parts	Condition Description
Clean Cloths Lubricating Oil (MIL-L-7870A)	Shoot bolt in component Component on raised flat surface in an upright position. No obstruction under pin jaws.

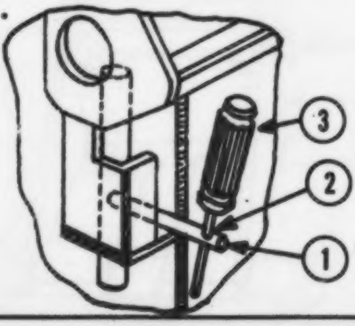
Tools	Personnel Required
8 inch pliers or visegrips 4 inch cross tip screw driver 6 inch flat file	MOS 12C Bridge Crewman/Specialist

NOTE

Two types of shoot bolt handles are used. One type has a 3/16 in (7mm) diameter hole through the unthreaded end. The other type does not have a hole through it.

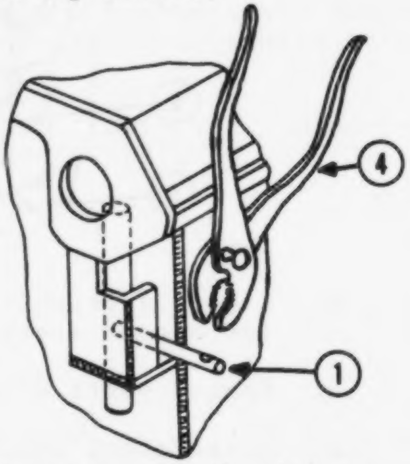
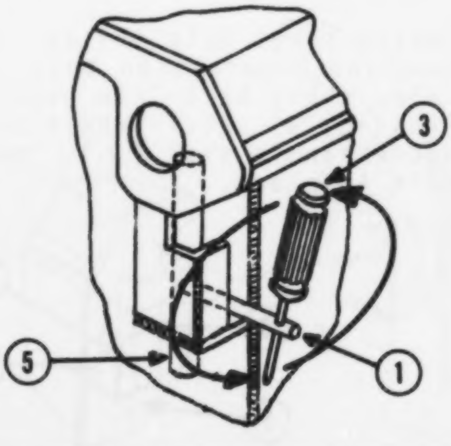
REMOVAL

LOCATION/ITEM	ACTION	REMARKS
1. Shoot bolt handle (1)	a. If handle (1) has a hole (2) in it, insert the screwdriver (3) through the hole at least 3 in (7.6 cm).	



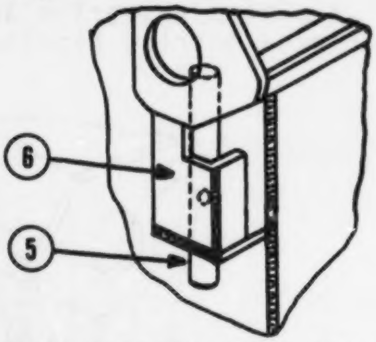
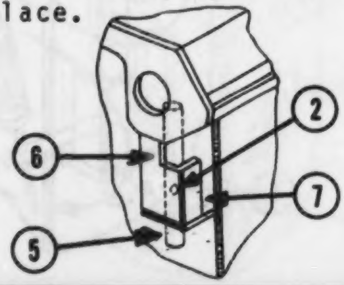
3-5. MAINTENANCE PROCEDURES (Cont).

(2) SHOOT BOLT (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP AND JUNCTION PANELS) (Cont).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
	b. If handle (1) does not have a hole in it, grasp the handle as close to the threaded end as possible with the pliers/visegrips (4). Use a piece of cloth between teeth of pliers/visegrips and handle to reduce burring handle.  	
	c. Loosen and remove handle (1) by turning handle with screwdriver (3) or pliers/visegrips (4) in a counterclock-wise motion.  	Hold bottom of shoot bolt (5) during removal of handle.

3-5. MAINTENANCE PROCEDURES (Cont).

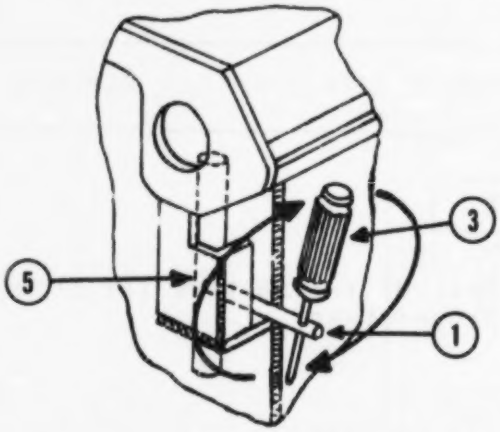
(2) SHOOT BOLT (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP AND JUNCTION PANELS) (Cont).

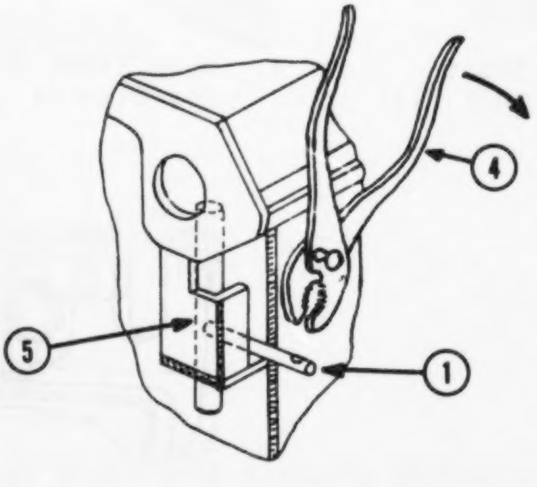
LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
2. Shoot bolt (5)	a. After handle has been removed, shoot bolt (5) can be lowered through housing (6). Take it down through the compression bushing and pin jaws. 	
SERVICE/REPAIR		
3. Shoot bolt and handle	a. Visually inspect bolt and handle for burred areas.	
	b. Remove burrs with a file.	
	c. Clean shoot bolt and handle with an oil soaked cloth.	
	d. Wipe dry with a clean dry cloth.	
INSTALLATION		
4. Shoot bolt (5)	Insert shoot bolt (5) up through pin jaws and compression bushing. Guide shoot bolt into bottom of housing (6) until handle hole (2) is above handle slot (7). Hold shoot bolt in place. 	Ensure that short end of shoot bolt is down.

3-5. MAINTENANCE PROCEDURES (Cont).

(2) SHOOT BOLT (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP AND JUNCTION PANELS) (Cont).

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont)		
	NOTE Shoot bolts in heavy nose sections do not have a short end. The handle hole is centered.	
5. Shoot bolt handle (1)	a. Insert handle (1) into shoot bolt (5) and turn handle clockwise by hand.	
	b. Tighten with screwdriver (3) or pliers/visegrips (4).	





3-5. MAINTENANCE PROCEDURES (Cont).

(3) SHOOT BOLT (BOTTOM PANEL).

This task covers:

a. Removal b. Service/Repair c. Installation

INITIAL SETUP

Materials/Parts

Clean Cloths
Lubricating Oil (MIL-L-7870A)
Grease, Auto and Art. (GAA)

Condition Description

Shoot bolt in component
Component on flat surface

Tools

4 inch flat tip screwdriver
7/16 inch open end wrench
3/8 inch open end wrench

Personnel Required

MOS 12C Bridge Crewman/Specialist

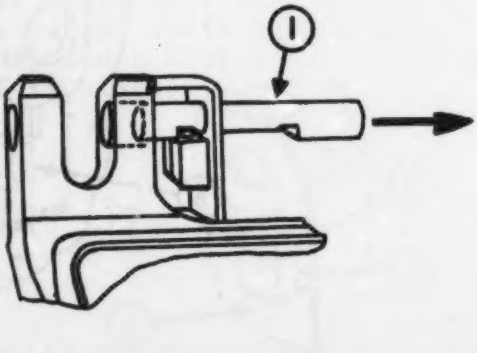
LOCATION/ITEM	ACTION	REMARKS

NOTE

Once experience is gained, personnel will find that the shoot bolt can be removed without the screwdriver

REMOVAL

1. Shoot bolt (1)	a. Move shoot bolt (1) to open position by hand.	

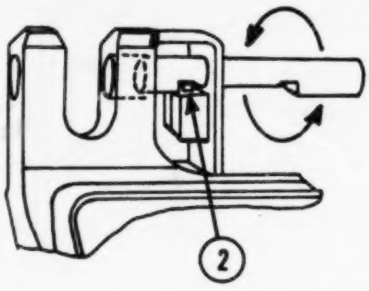


3-5. MAINTENANCE PROCEDURES (Cont).

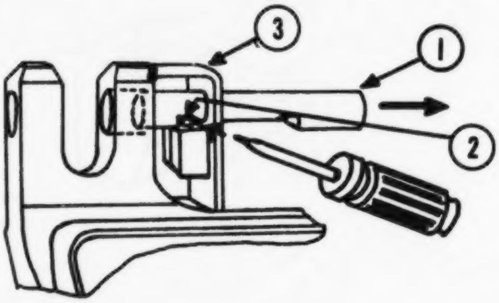
(3) SHOOT BOLT (BOTTOM PANEL).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		

b. Grasp shoot bolt with one hand. Turn shoot bolt so that plunger (2) is depressed.



c. With other hand, insert tip of screwdriver between plunger (2) and shoot bolt (1).



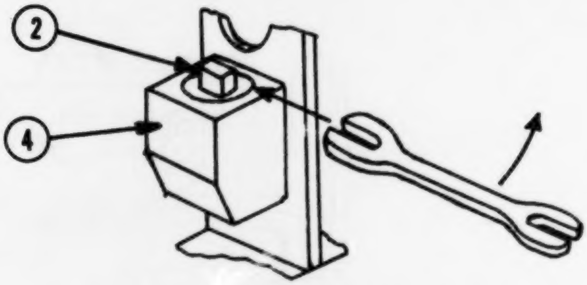
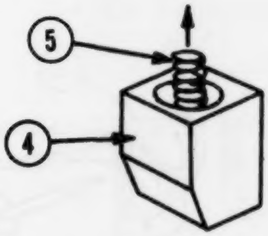
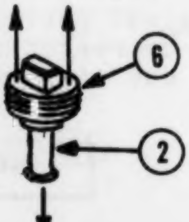
d. Turn shoot bolt (1) back to original position keeping plunger (2) depressed and pull shoot bolt (1) out of housing (3).

NOTE

Do not remove any other parts of shoot bolt assembly unless they require servicing.

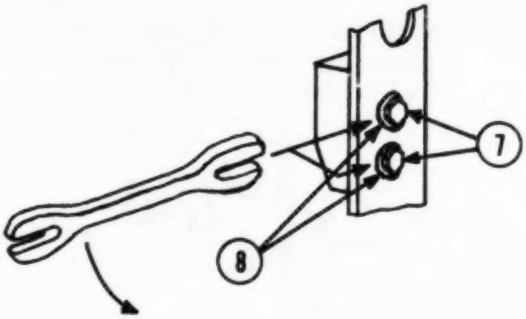
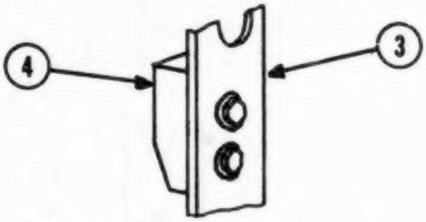
3-5. MAINTENANCE PROCEDURES (Cont).

(3) SHOOT BOLT (BOTTOM PANEL).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
2. Shoot bolt plunger (2)	a. Using a 3/8 in open end wrench, remove shoot bolt plunger (2) from plunger housing (4).	
		
	b. Remove plunger spring (5) from housing (4).	
		
	c. Remove plunger retainer (6) from plunger (2).	
		

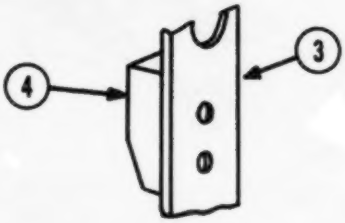
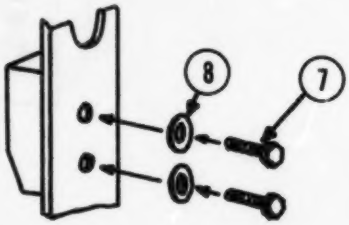
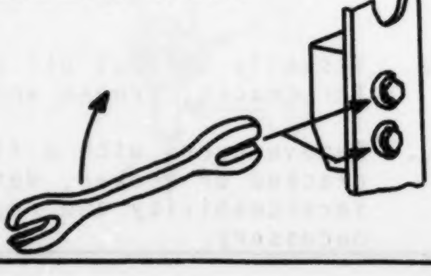
3-5. MAINTENANCE PROCEDURES (Cont).

(3) SHOOT BOLT (BOTTOM PANEL).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
3. Plunger housing (4)	a. Using a 7/16 in open end wrench, remove two bolts (7) and washers (8) from housing.  	
	b. Remove plunger housing (4) from shoot bolt housing (3).  	
SERVICE/REPAIR		
1. Shoot bolt and related components	a. Wipe all components clean with an oil soaked cloth.	
	b. Visually inspect all components for cracks, breaks and burrs.	
	c. Remove burrs with a file. If cracked or broken, determine serviceability and replace if necessary.	

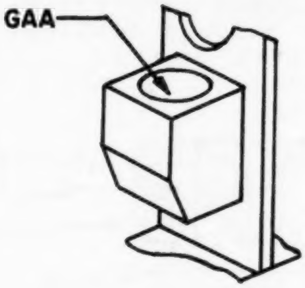
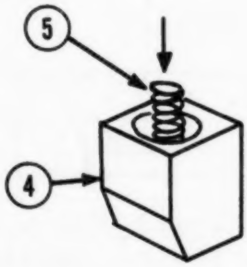
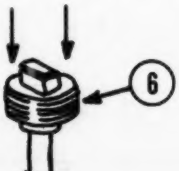
3-5. MAINTENANCE PROCEDURES (Cont).

(3) SHOOT BOLT (BOTTOM PANEL).

LOCATION/ITEM	ACTION	REMARKS
SERVICE REPAIR (Cont)		
	d. Wipe dry with a clean dry cloth.	
INSTALLATION		
1. Plunger housing (4)	a. With one hand, hold plunger housing (4) in place in shoot bolt housing (3).  	
	b. With other hand, insert the 7/16 in bolts (7) and washers (8) until hand tight.  	
	c. With 7/16 in open end wrench, tighten both bolts. 	

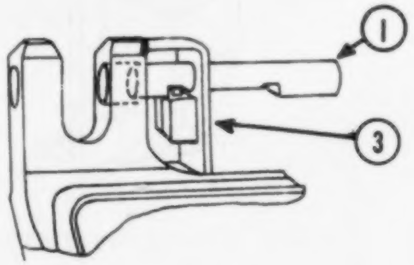
3-5. MAINTENANCE PROCEDURES (Cont).

(3) SHOOT BOLT (BOTTOM PANEL).

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont)		
	d. Pack plunger housing (4) with GAA until housing is half full. 	
	e. Insert plunger spring (5) into housing (4). 	
2. Shoot bolt plunger	a. Insert plunger into retainer (6). 	
	b. Insert plunger and retainer into housing and turn to tighten until hand tight.	
	c. Use 3/8 in open wrench to tighten plunger. Ensure that plunger is crosswise to direction of shoot bolt when tight.	

(3) SHOOT BOLT (BOTTOM PANEL).

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont)		
3. Shoot bolt	a. Insert small end of shoot bolt (1) into housing (3). Shoot bolt will automatically depress plunger on its way through housing.	



3-5. MAINTENANCE PROCEDURES (Cont).

(4) COMPRESSION BUSHING (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP, BOTTOM JUNCTION AND END TAPER PANELS).

This task covers:

a. Removal b. Service/Repair c. Installation

INITIAL SETUP

Materials/Parts	Condition Description
Clean Cloths	Compression bushing in component. Component on raised flat surface in an upright position. No obstruction under bushing.

Tools	Personnel Required
8 inch pliers 1 drift pin 1 lb ball peen hammer	MOS 12C Bridge Crewman/Specialist

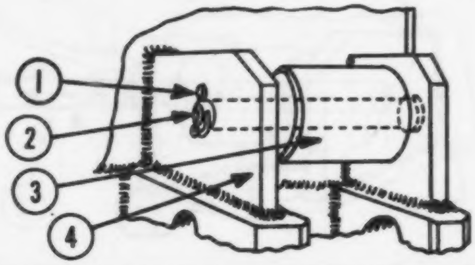
LOCATION/ITEM	ACTION	REMARKS

NOTE

The compression bushing and bushing pin should turn freely in its housing. If it does not it must be removed for servicing.

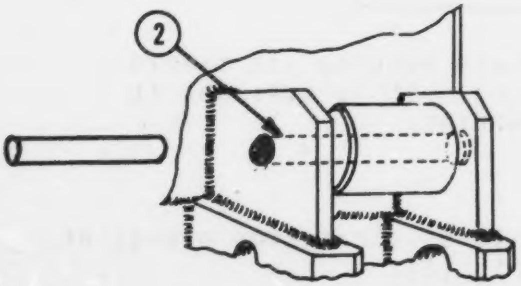
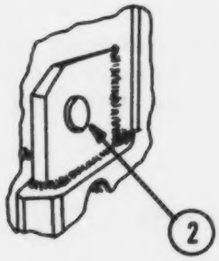
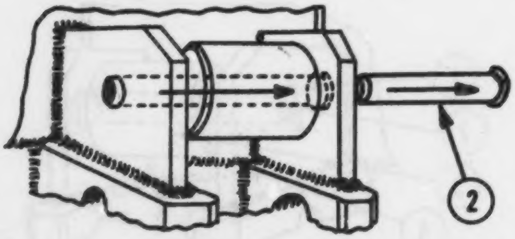
REMOVAL

1. Cotter pin	a. Using pliers, straighten prongs of cotter pin (1).	
	b. Remove cotter pin (1) with pliers.	



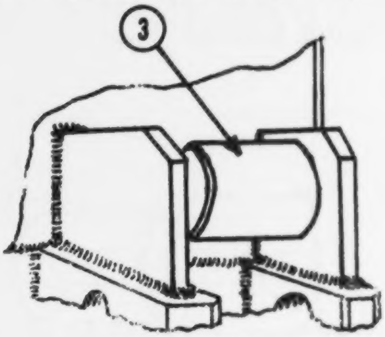
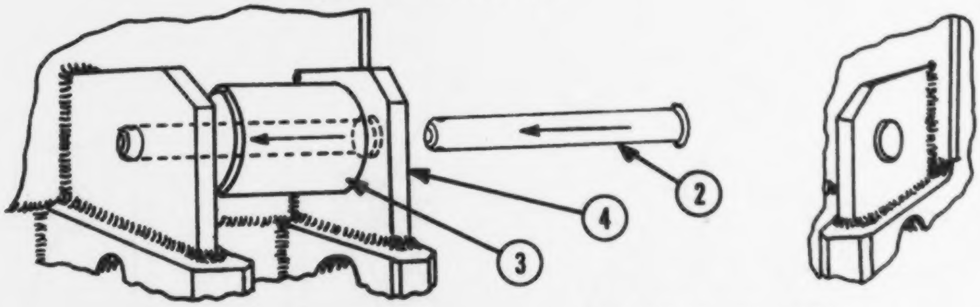
3-5. MAINTENANCE PROCEDURES (Cont).

(4) COMPRESSION BUSHING (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP, BOTTOM JUNCTION AND END TAPER PANELS).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
2. Bushing pin and guide bushing	a. Push end of pin (2) with finger until other end can be grasped.	
	b. Remove bushing pin (2) by pulling with fingers until pin is free of bushing (3) and housing (4).	
	NOTE If bushing pin can not be removed with fingers, it will be necessary to use the drift pin and hammer.	
	c. Hold drift pin firmly against the end of the bushing pin (2).	
	d. Tap the end of the drift pin with the hammer until the bushing pin (2) is free.  	
	e. Remove bushing pin (2). 	

3-5. MAINTENANCE PROCEDURES (Cont).

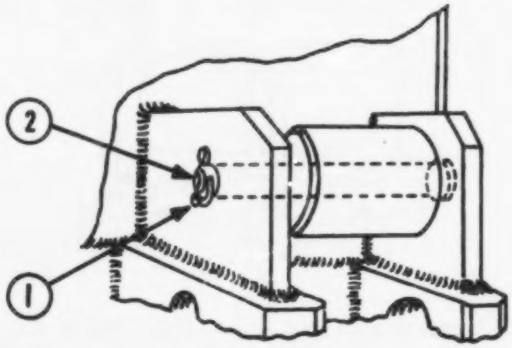
(4) COMPRESSION BUSHING (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP, BOTTOM JUNCTION AND END TAPER PANELS).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
	f. Remove guide bushing (3).  	
SERVICE/REPAIR		
1. Bushing pin and guide bushing	a. Clean bushing pin and hole in guide bushing with crocus cloth.	
	b. Clean holes in bushing housing with crocus cloth.	
INSTALLATION		
1. Guide bushing and bushing pin	a. Hold guide bushing (3) in housing (4) and insert bushing pin (2) until head of pin is fully seated against housing.  	
	b. Push cotter pin (1) through hole in bushing pin (2).	

3-5. MAINTENANCE PROCEDURES (Cont).

(4) COMPRESSION BUSHING (BANKSEAT BEAM, HEAVY NOSE SECTIONS, TOP, BOTTOM JUNCTION AND END TAPER PANELS).

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont)		
	c. Bend prongs of cotter pin (1) around end of bushing pin (2).	



3-5. MAINTENANCE PROCEDURES (Cont).

(5) PINS AND CHAINS (LAUNCHING NOSE CROSS GIRDER).

This task covers:

a. Removal b. Service/Repair c. Installation

INITIAL SETUP

Materials/Parts

Clean Cloths
Lubricating Oil (MIL-L-7870A)

Condition Description

Chain and pin attached to component. Component on flat surface.

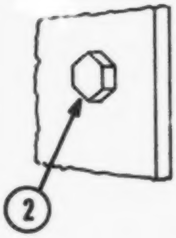
Tools

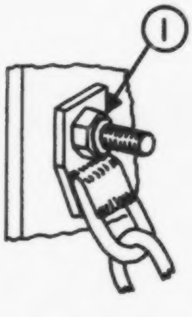
8 inch pliers
6 inch flat file

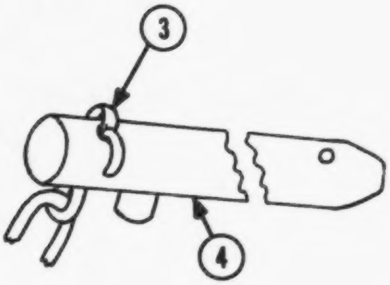
Personnel Required

MOS 12C Bridge Crewman/Specialist

LOCATION/ITEM		ACTION	REMARKS
REMOVAL			
1. Chain and pin (Launching nose cross girder	a.	Using an open end wrench remove nut (1) from bolt (2).	
	b.	Using pliers, straighten prongs of cotter pin (3) until pin can be removed.	
	c.	Remove cotter pin (3) from captive pin (4).	

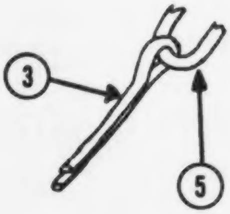
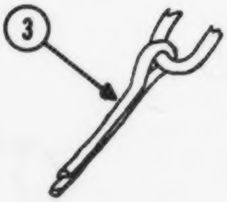






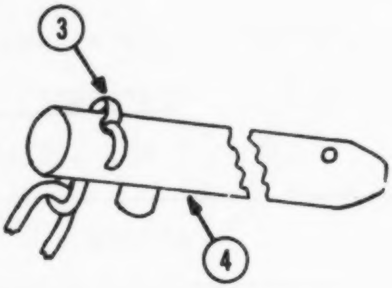
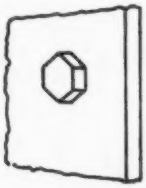
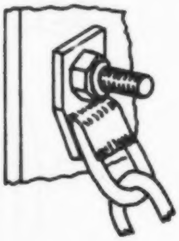
3-5. MAINTENANCE PROCEDURES (Cont).

(5) PINS AND CHAINS (LAUNCHING NOSE CROSS GIRDER).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
	d. Spread cotter pin (3) prongs and remove pin from chain link (5).	
		
SERVICE		
1. Pin, bolt	a. Clean components with an oil soaked cloth.	
	b. Dry components with a dry clean cloth.	
INSTALLATION		
1. Chain and pin	a. Spread prongs of cotter pin (3) and slide chain link through prongs.	
		

3-5. MAINTENANCE PROCEDURES (Cont).

(5) PINS AND CHAINS (LAUNCHING NOSE CROSS GIRDER).

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont)		
	b. Insert prongs of cotter pin (3) into hole in captive pin (4) until fully seated.	
	 	
	c. Bend prongs of cotter pin (3) around captive pin (4).	
	d. Insert bolt through chain link and hole in cross girder.	
	 	
	e. Install nut and tighten using open end wrenches.	

3-5. MAINTENANCE PROCEDURES (Cont).

(6) CHAINS AND PINS (ADJUSTABLE SUPPORT).

This task covers:

a. Removal b. Service/Repair c. Installation

INITIAL SETUP

Materials/Parts

Clean Cloths
Lubricating Oil (MIL-L-7870A)

Condition Description

Pin and chain connected to adjustable support.

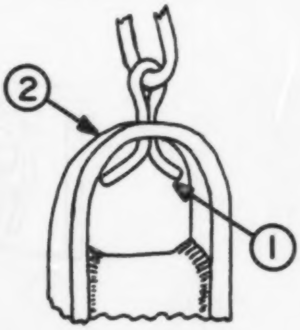
Tools

8 inch pliers

Personnel Required

MOS 12C Bridge Crewman/Specialist

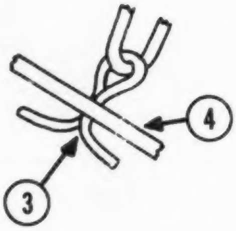
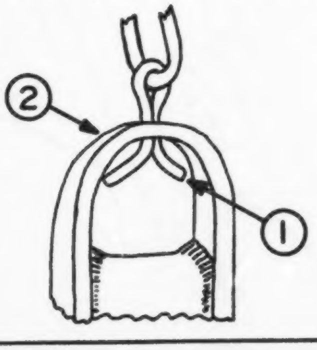
LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Support pin	a. Using pliers, straighten prongs of cotter pin (1) in support pin handle (2).	



b. Remove cotter pin (1) from handle (2).

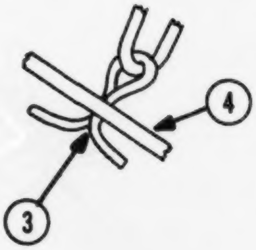
3-5. MAINTENANCE PROCEDURES (Cont).

(6) CHAINS AND PINS (ADJUSTABLE SUPPORT).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont)		
2. Chain	a. Using pliers, straighten prongs of cotter pin (3) in adjustable support (4).  	
	b. Remove cotter pin (3) and chain (5) from adjustable support (4).	
SERVICE		
1. Support pin	a. Clean pin with a clean oil soaked cloth. b. Wipe pin dry with a clean dry cloth.	
INSTALLATION		
1. Support pin	a. Install cotter pin (1) in handle (2). b. Bend prongs of cotter pin (1).  	

3-5. MAINTENANCE PROCEDURES (Cont).

(6) CHAINS AND PINS (ADJUSTABLE SUPPORT).

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont)		
2. Chain	a. Install cotter pin (3) in hole in adjustable support (4). 	
	b. Bend prongs of cotter pin (4).	

3-5. MAINTENANCE PROCEDURES (Cont).

(7) LEVELLING SCREW (ADJUSTABLE SUPPORT).

This task covers:

a. Removal b. Service/Repair c. Installation

INITIAL SETUP

Materials/Parts	Condition Description
Clean Cloths Lubricating Oil (MIL-L-7870A) Grease, Auto and Art. (GAA)	Levelling screw in adjustable support.

Tools	Personnel Required
NONE	MOS 12C Bridge Crewman/Specialist

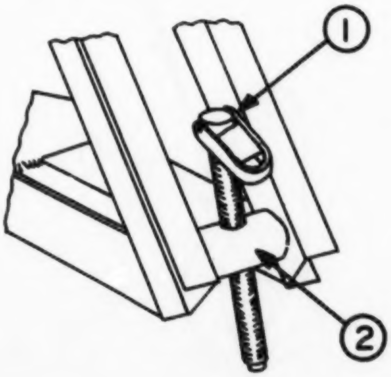
LOCATION/ITEM	ACTION	REMARKS

NOTE

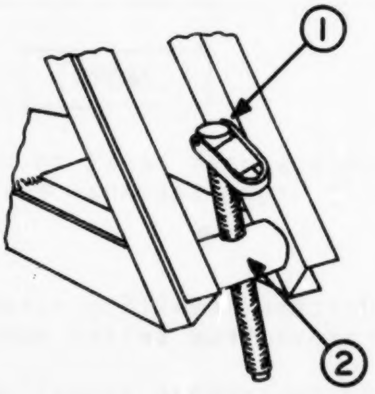
If levelling screw has been bent, do not try to remove it. Refer bent screw to Organizational Maintenance.

REMOVAL

1. Levelling screw
   a. Unscrew levelling screw (1) and remove from swivel mount (2).
   b. Do not remove swivel mount (2) from support.



(7) LEVELLING SCREW (ADJUSTABLE SUPPORT).

LOCATION/ITEM	ACTION	REMARKS
SERVICE/REPAIR		
1. Levelling screw	a. Clean with oil soaked cloth.	
	b. Wipe dry with a clean dry cloth.	
	c. Apply a light coat of GAA to threaded part of screw.	
INSTALLATION		
1. Levelling screw	a. Install levelling screw (1) in swivel mount (2).	
		

3-5. MAINTENANCE PROCEDURES (Cont).

(8) HYDRAULIC JACK.

This task covers:

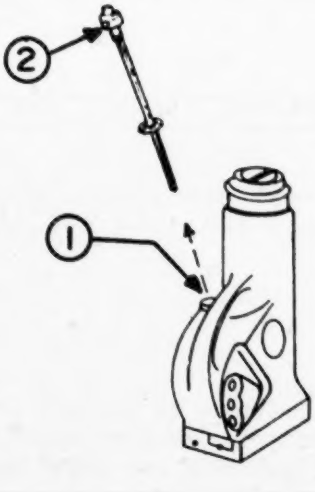
a. Service

INITIAL SETUP

Materials/Parts	Condition Description
Clean Cloths Lubricating Oil (MIL-L-7870A)	Jack sitting on level surface.

Tools	Personnel Required
NONE	MOS 12C Bridge Crewman/Specialist

LOCATION/ITEM	ACTION	REMARKS
SERVICE		
1. Filler cap	a. Remove filler cap (1) and inspect seal (2) on washer.	
	b. Fill to level indicated on dipstick with fresh clean lubricating oil, MIL-L-7870A.	
	c. Install filler cap, hand tighten only.	



3-5. MAINTENANCE PROCEDURES (Cont).

(8) HYDRAULIC JACK.

LOCATION/ITEM	ACTION	REMARKS
SERVICE (Cont)		
	d. Operate pump until ram has risen two or three inches.	
	e. Unscrew release valve screw no more than 1-1/2 turns.	
	f. Press ram down as far as it will go.	
	g. Repeat d, e, and f five times to complete removal of air in system.	

CHAPTER 4
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

	PARAGRAPH	PAGE
Common Tools and Equipment	4-1	4-1
Special Tools, TMDE, and Support Equipment	4-2	4-1
Repair Parts	4-3	4-1
Sevice Upon Receipt	4-4	4-2
Detailed Lubrication Instructions	4-6	4-3
Preventive Maintenance Checks and Services	4-10	4-5
Troubleshooting	4-12	4-9
Maintenance of Bridge and Erection Set Components	4-14	4-17

OVERVIEW

This chapter contains maintenance and servicing procedures that are the responsibility of Organizational Maintenance. Operator Maintenance tasks given in Chapter 3 are not repeated in this chapter.

SECTION I. REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT.

Tools issued with or authorized for the Medium Girder Bridge are listed in Appendix B. Basic issue tools and repair parts for the truck and trailer are listed in TM 9-2320-260-20P and TM 9-2330-287-14 respectively.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

There are no special tools required for Organizational Maintenance to maintain the bridge and erection sets.

4-3. REPAIR PARTS.

See TM 5-5420-212-20P for a listing of repair parts required for maintaining the bridge and erection sets. Organizational maintenance repair parts required for maintenance of the M817 Dump Truck and M796 Trailer are listed in TM 9-2320-260-20P and TM 9-2330-287-14.

SECTION II. SERVICE UPON RECEIPT

4-4. SERVICE UPON RECEIPT.

a. The bridge and erection sets will be inspected and serviced before it is placed in everyday use.

b. Inspection and Servicing Equipment. Perform the inspection checks listed in table 4-1. Be sure the containers are right side up. Unpack and inventory components according to SC 5420-97-CL-E52 and SC 5420-97-CL-E53 in Appendix B. Refer to TM 9-2310-260-10 and TM 9-2320-287-14 for inspection and service of truck and trailer.

Table 4-1. Inspection Checks and Services.

Sequence Number	Item to be Inspected Procedure	Work Time M/H
1	Bridge Set Components Inspect bridge set components for cracks, breaks, dents, peeling paint, cracked or broken connectors, brackets and lugs, damaged or missing pins, clips and shoot bolts and missing attaching hardware.	
2	Bridge Launching Components Inspect bridge launching components for cracks, breaks, broken or bent connectors and pins, and peeling paint. Ensure stenciled warnings and/or markings are in place and are legible.	
3	Pallets and Adapters Check pallets and adapters for cracks, breaks and missing or broken attaching hardware.	

SECTION III. LUBRICATION INSTRUCTIONS

4-5. GENERAL.

a. Keep all lubricants in closed containers and store in a clean, dry place away from external heat. Allow no dust, dirt, or other foreign material to mix with the lubricants. Keep all lubrication equipment clean and ready to use.

b. Keep all external parts not requiring lubrication clean of lubricants. Before lubricating the equipment, wipe all lubrication points free of dirt and grease. Clean all lubrication points after lubricating, to prevent accumulation of foreign matter.

4-6. DETAILED LUBRICATION INSTRUCTIONS.

a. Lubricate truck chassis in accordance with Lubrication Order, LO 9-2320-260-12.

b. Lubricate trailer chassis in accordance with Lubrication Chart in TM 9-2320-287-14.

4-7. SERVICING THE ROLLERS OF THE LANDING ROLLER PEDESTAL, LANDING ROLLER, LAUNCHING NOSE ROLLER, LAUNCHING NOSE CROSS GIRDER AND ROLLER BEAM.

WARNING

When using compressed air, wear safety goggles or glasses and ensure air blast is not directed toward another person.

a. Use compressed air to remove dust, dirt and other foreign matter from rollers. Check to ensure rollers are not binding.

4-8. SERVICING THE HYDRAULIC JACKS.

a. General. This paragraph contains a list of parts required and necessary procedures for servicing, filling and testing the 15-ton hydraulic jack as used on the Medium Girder Bridge. Only fluid level check and replenishing of fluid will be carried out at user maintenance. Troubleshooting chart (Table 4-3) is provided to assist in locating the probable cause of external and internal leakage.

b. Hydraulic Fluid Level Check. The reservoir filler cap incorporates a dipstick to gage fluid level. The fluid capacity is approximately 2-5/8 pints (1-1/2 liters). Check fluid level and add fluid as needed.

SECTION IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-9. GENERAL.

This section contains organizational PMCS for the Medium Girder Bridge. Table 4-2 lists and describes the necessary checks and services to be performed, in conjunction with the checks and services provided in Chapter 3, Section II.

4-10. PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

Item numbers in Table 4-2 are listed consecutively and indicate the sequence of minimum requirements.

Table 4-2. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

LEGEND

Q - Quarterly S - Semiannually A - Annually

Item No.	Interval			Item to be inspected	PROCEDURES	Equipment Is not ready/ available if:
	Q	S	A			
1		●		Medium Girder Bridge	Inspect installed bridge for evidence of damage and security of installation.	
2		●		Curbs	Inspect for cracks.	
3		●		Guide posts	Inspect for cracks and breaks.	
4		●		Deck units	Inspect for cracks and breaks.	
5		●		Ramp Units	Inspect for cracks, dents, damaged connectors and lugs.	Cracks and breaks at the connector area.
*6		●		Bankseat Beam	Inspect for cracks, dents, damaged connectors and brackets	Cracks and breaks at the connector area.
*7		●		End Taper Panels	Inspect for cracks, dents, broken or bent connectors and brackets, and peeling paint.	Cracks and breaks at the connector area.

*WARNING: If bituminous black material is oozing from component, this indicates a serious crack. This component must be removed and referred to DS Maintenance.

Table 4-2. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont).

LEGEND

Q - Quarterly S - Semiannually A - Annually

Item No.	Interval			Item to be inspected	PROCEDURES	Equipment Is not ready/ available if:
	Q	S	A			
*8		●		Junction Panels	Inspect for cracks, dents, broken or bent connectors and brackets.	Cracks and breaks at the connector area.
9		●		Pins and Clips	Inspect for cracks, dents, broken or bent pins and clips missing.	
*10		●		Top Panels	Inspect for cracks, dents, broken or bent connectors, brackets and spacers.	Cracks and breaks at the connector area.
11		●		Bottom Panels	Inspect for cracks, dents, damaged connectors and brackets.	Cracks and breaks at the connector area.
12		●		Sway Braces	Inspect for cracks, dents, broken or bent sway brace, pins and clips.	
13		●		Launching Components	Inspect for evidence of damage and security of installation.	
14		●		Nose Units	Inspect for cracks, dents, damaged or worn connectors and pins.	
15		●		Rollers	Inspect for cracks, breaks damaged or worn rollers.	
16		●		Girders	Inspect for cracks, breaks, damaged or worn connectors.	

*WARNING: If bituminous black material is oozing from component, this indicates a serious crack. This component must be removed and referred to DS Maintenance.

Table 4-2. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont).

LEGEND

Q - Quarterly S - Semiannually A - Annually

Item No.	Interval			Item to be inspected	PROCEDURES	Equipment Is not ready/ available if:
	Q	S	A			
17		●		Push Bars	Inspect for cracks, breaks, and legible stenciled markings.	
18		●		Hydraulic Jacks	Inspect for cracks, breaks, and fluid leaks and fluid level.	Will not lift, or leaks badly.
19		●		Jack Post	Inspect for cracks or breaks.	
20		●		Pallets and Adapters	Inspect for cracks, breaks, and missing hardware.	

SECTION V. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING

4-11. GENERAL.

a. Information in this section is for use by organizational maintenance personnel, in conjunction with, and as a supplement to the troubleshooting information in Table 3-1. It provides continuation of instructions where a remedy in the operator/crew troubleshooting table refers to organizational maintenance personnel for corrective action.

b. The troubleshooting procedure, where applicable, will be performed with components installed.

c. Inspections made while components are mounted on equipment are for the most part, visual. The appearance of a component or assembly may indicate it's general condition.

d. Ensure that all components are properly installed. Examine for loose or missing attaching hardware; secure or replace as required.

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING.

a. Upon completion of general troubleshooting, perform specific troubleshooting procedures listed in Table 4-3.

b. Table 4-3 contains malfunctions (or defects) tests/inspections, and corrective actions within the scope of organizational repair as authorized by the Maintenance Allocation Chart, Appendix C. The malfunctions (or defects) are followed by a list of tests or inspections which will help to determine probable causes and corrective actions to take. The tests/inspections and corrective actions should be performed in the order listed.

SYMPTOM INDEX

	TROUBLESHOOTING PROCEDURE	
	MALFUNCTION ITEM NO.	PAGE
TOP PANEL	1.	4-11
RAMP UNIT		
Will Not Connect	2.	4-11
Lifts When Traffic Crosses	3.	4-11
Impact Damage	4.	4-12

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING (Cont).

SYMPTOM INDEX (Cont)

	TROUBLESHOOTING PROCEDURE	
	MALFUNCTION ITEM NO.	PAGE
DECK UNIT		
Will Not Seat	5.	4-12
Impact Damage	6.	4-12
CURB		
Will Not Connect	7.	4-12
Impact Damage	8.	4-12
SWAY BRACE	9.	4-12
BOTTOM PANEL	10.	4-13
END TAPER PANEL	11.	4-13
JUNCTION PANEL	12.	4-13
BANKSEAT BEAM	13.	4-13
PINS	14.	4-13
LAUNCHING NOSE SECTIONS	15.	4-14
ROLLERS (In Roller Beam, Nose Roller, Nose Cross Girder, and Landing Roller)	16.	4-14
LAUNCHING NOSE ROLLER	17.	4-14
LAUNCHING NOSE CROSS GIRDER POST	18.	4-14
LAUNCHING NOSE CROSS GIRDER	19.	4-14
ADJUSTABLE SUPPORT (Support Pins)	20.	4-14
FRAME CROSS GIRDER	21.	4-15
ROLLER BEAM (Jack Hoods)	22.	4-15
JACK POSTS	23.	4-15
JACK SUPPORTS	24.	4-15

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING (Cont).

SYMPTOM INDEX (Cont)

	TROUBLESHOOTING PROCEDURE	
	MALFUNCTION ITEM NO.	PAGE
FIXED SUPPORT	25.	4-15
PUSH BAR ADAPTER	26.	4-15
PUSH BAR	27.	4-16
PUSH BAR CROSS GIRDER	28.	4-16

Table 4-3. ORGANIZATIONAL TROUBLESHOOTING.

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. TOP PANEL WILL NOT CONNECT TO ANOTHER PANEL OR BANKSEAT BEAM.

Inspect for cracked, bent or distorted:

(a) pin jaws
(b) butting surfaces
(c) guide slot or compression bushing housing

Report condition to DS maintenance.

2. RAMP UNIT WILL NOT CONNECT TO BANKSEAT BEAM.

Inspect for bent or distorted ramp hook.

Report condition to DS maintenance.

3. RAMP LIFTING WHEN TRAFFIC IS CROSSING BRIDGE.

Inspect for:

(a) damage to ramp hook
(b) missing anti-lift lug

Report condition to DS maintenance.

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING (Cont).

Table 4-3. ORGANIZATIONAL TROUBLESHOOTING (Cont).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
4. RAMP UNIT IMPACT DAMAGE.	Inspect ramp to determine extent of damage.	Report condition to DS maintenance.
5. DECK UNITS WILL NOT SEAT IN DECK UNIT RECESS OF PANEL.	Inspect for bent or distorted deck unit.	Report condition to DS Maintenance.
6. DECK UNIT IMPACT DAMAGE.	Inspect deck to determine extent of damage.	Report condition to DS maintenance.
7. CURB WILL NOT CONNECT TO TOP PANEL.	Inspect for bent or distorted curb.	Report condition to DS maintenance.
8. CURB IMPACT DAMAGE.	Inspect curb to determine extent of damage.	Report condition to DS maintenance.
9. SWAY BRACE WILL NOT CONNECT TO BANKSEAT BEAM, BOTTOM OR END TAPER PANEL.	Inspect for bent or distorted sway brace.	Report condition to DS maintenance.

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING (Cont).

Table 4-3. ORGANIZATIONAL TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

10. BOTTOM PANEL WILL NOT CONNECT TO TOP, JUNCTION OR ANOTHER BOTTOM PANEL.

Inspect for:

(a) cracked, bent or distorted pin jaws
(b) cracked, bent or distorted shoot bolt housing

Report condition to DS maintenance.

---

11. END TAPER PANEL WILL NOT CONNECT TO BANKSEAT BEAM OR JUNCTION PANEL.

Inspect for cracked, bent or distorted pin jaws.

Report condition to DS maintenance.

---

12. JUNCTION PANEL WILL NOT CONNECT TO TOP, END TAPER OR BOTTOM PANEL.

Inspect for cracked, bent or distorted pin jaws.

Report condition to DS maintenance.

---

13. BANKSEAT BEAM WILL NOT CONNECT TO TOP OR END TAPER PANEL.

Inspect for cracked, bent or distorted:

(a) pin jaws
(b) butting surfaces
(c) guide slot or compression bushing housing

Report condition to DS maintenance.

---

14. PINS WILL NOT SEAT COMPLETELY IN PIN JAWS.

Inspect for bent or distorted pins

Report condition to DS maintenance.

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING (Cont).

Table 4-3. ORGANIZATIONAL TROUBLESHOOTING (Cont).

MALFUNCTION

  TEST OR INSPECTION

    CORRECTIVE ACTION

---

15. LAUNCHING NOSE SECTIONS WILL NOT CONNECT TO ANOTHER NOSE SECTION OR BANKSEAT BEAM.

  Inspect for cracked, bent or distorted:

  (a) pin jaws
  (b) butting surfaces
  (c) guide slot or compression bushing housing

---

16. ROLLERS IN ROLLER BEAM, LAUNCHING NOSE ROLLER, LAUNCHING NOSE CROSS GIRDER AND LANDING ROLLER WILL NOT TURN.

  Inspect for evidence of damage to roller.

    Report condition to DS maintenance.

---

17. LAUNCHING NOSE ROLLER WILL NOT CONNECT TO BANKSEAT BEAM.

  Inspect for bent or distorted pin jaws or hooks.

    Report condition to DS maintenance.

---

18. LAUNCHING NOSE CROSS GIRDER POSTS WILL NOT CONNECT TO TOP OR JUNCTION PANEL.

  Inspect for bent or distorted lugs.

    Report condition to DS maintenance.

---

19. LAUNCHING NOSE CROSS GIRDER WILL NOT ATTACH TO POST.

  Inspect for bent pin jaws.

    Report condition to DS maintenance.

---

20. SUPPORT PINS OF ADJUSTABLE SUPPORT WILL NOT SEAT IN SUPPORT PIN HOLES.

  Inspect for bent pin.

    Report condition to DS maintenance.

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING (Cont).

Table 4-3. ORGANIZATIONAL TROUBLESHOOTING (Cont).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
21. FRAME CROSS GIRDER WILL NOT CONNECT TO ADJUSTABLE SUPPORT.	Inspect for bent or distorted connectors.	Report condition to DS maintenance.
22. ROLLER BEAM JACK HOODS WILL NOT MOVE TO UP POSITION.	Inspect for bent jack hood or mounting brackets.	Report condition to DS maintenance.
23. JACK POST WILL NOT CONNECT TO BANKSEAT BEAM.	Inspect for bent or distorted hooks or nose pin housing.	Report condition to DS maintenance.
24. JACK SUPPORTS WILL NOT CONNECT TO BASEPLATE.	Inspect for bent or distorted support.	Report condition to DS maintenance.
25. FIXED SUPPORT WILL NOT CONNECT TO BASEPLATE.	Inspect for bent or distorted flanges on support.	Report condition to DS maintenance.
26. PUSH BAR ADAPTER WILL NOT CONNECT TO BUMPER OF TRUCK.	Inspect for bent or distorted mounting brackets.	Report condition to DS maintenance.

4-12. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING (Cont).

Table 4-3. ORGANIZATIONAL TROUBLESHOOTING (Cont).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

---

27. PUSH BAR WILL NOT CONNECT TO ADAPTER, BANKSEAT BEAM OR CROSS GIRDER.

Inspect for bent or distorted connectors.

Report condition to DS maintenance.

---

28. PUSH BAR CROSS GIRDER WILL NOT CONNECT TO PANELS.

Inspect for bent or distorted girder.

Report condition to DS maintenance.

SECTION VI. MAINTENANCE PROCEDURES

4-13. GENERAL.

a. All components must be cleaned and inspected at regular intervals. If any cracks or damage are noted, items must be repaired at authorized level of maintenance.

b. Periodic inspection by an authorized inspector will be carried out at regular intervals. Visual inspection of all bridge and launching components will be made following each bridge mission.

CAUTION

Bridge primary components are highly stressed and early detection of crack damage is most important. Delay in detection of cracks may result in complete failure of a component.

c. Bridge set shall be withdrawn from service semi-annually, for a full inspection.

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS.

NOTE

During inspections, pay particular attention to all welds, top and bottom chords of highly stressed components and all connectors and lugs.

TASK	PROCEDURE	PAGE
(1)	Curb Units	4-19
(2)	Guide Marker	4-20
(3)	Sway Brace	4-21
(4)	Launching Nose Roller (Rollers Only)	4-22
(5)	Launching Nose Roller (Welding Frame)	4-23
(6)	Launching Nose Cross Girder (Rollers Only	4-24
(7)	Launching Nose Cross Girder (Welded Frame)	4-25
(8)	Adjustable Support	4-26
(9)	Building Frame Cross Girder	4-27
(10)	Baseplate (Fixed and Adjustable Support)	4-28
(11)	Push Bar and Adapter	4-29
(12)	Push Bar Cross Girder	4-30
(13)	Pallet and Adapter (Welded Frame)	4-31
(14)	Pallet (Lifting Rings)	4-32
(15)	Pallet (Tie-down Rings)	4-34
(16)	Pallet (Shackles)	4-36

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

TASK	PROCEDURE	PAGE
(17)	Pallet (Rubber Bumper)	4-38
(18)	Hydraulic Jack	4-40
(19)	Launching Nose Cross Girder Post	4-54
(20)	Extractor Cable and Lifting Sling	4-55
(21)	Equipment Basket	4-56

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(1) CURB UNIT

This task covers:

a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts

NONE

Condition Description

Curb removed from bridge or pallet load.

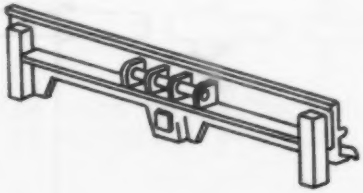
Tools

NONE

Personnel Required

MOS 62B Construction Equipment Repairman
MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect for cracks, breaks, cracked or broken welds, and peeling point.	
REPAIR		
	Repair damaged curb unit as required. For welding, refer to Appendix F.	
REPLACE		
	Replace non-repairable curb with serviceable curb	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(2) GUIDE MARKER

This task covers:

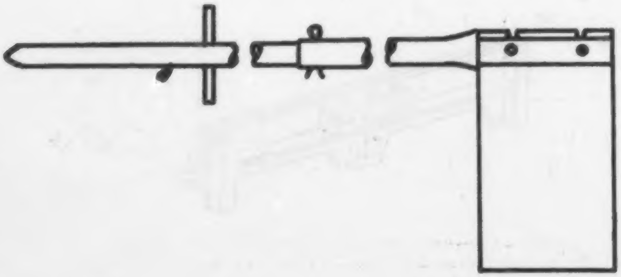
a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts	Condition Description
NONE	Guide post removed from bridge or pallet load.

Tools	Personnel Required
NONE	MOS 62B Construction Equipment Repairman MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect guide post for cracks and breaks.	
REPAIR		
	Repair damaged marker as needed. Refer to Appendix F for welding instructions.	
REPLACE		
	Replace non-repairable marker with serviceable marker.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(3) SWAY BRACE

This task covers:

a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts	Condition Description
NONE	Sway brace removed from bridge or pallet load.

Tools	Personnel Required
NONE	MOS 62B Construction Equipment Repairman MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect sway brace for cracks, breaks or distortion.	
	CAUTION Do not apply heat or straighten by use of a hammer.	
REPAIR		
	Repair cracked or broken sway brace by welding. Refer to Appendix F for welding instructions.	
REPLACE		
	Replace bent or distorted brace with serviceable brace.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(4) LAUNCHING NOSE ROLLER (ROLLERS ONLY)

This task covers:

a. Inspection b. Service c. Repair

INITIAL SETUP

Materials/Parts

NONE

Condition Description

Launching nose roller removed from bridge or pallet load.

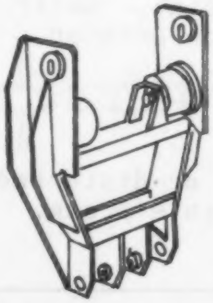
Tools

Air compressor w/Accessories
Protective Goggles
General Mechanics Tool Kit

Personnel Required

MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect rollers for cracks, breaks, dents and binding.	
SERVICE		
	Service rollers (para 4-7)	
REPAIR		
	Repair rollers by replacing defective roller with serviceable roller.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(5) LAUNCHING NOSE ROLLER (WELDED FRAME)

This task covers:

a. Inspection

b. Repair

INITIAL SETUP

Materials/Parts

NONE

Tools

General Mechanics Tool Kit

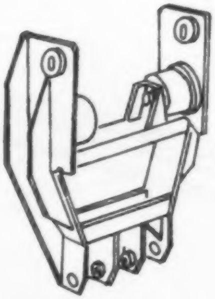
Condition Description

Nose roller removed from bridge or pallet load.

Personnel Required

MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect nose roller for cracks, breaks, dents, cracked or broken connectors and brackets.	
	Service rollers (para 4-7)	
REPAIR		
	Repair damaged roller by welding. Refer to Appendix F for welding instructions.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(6) LAUNCHING NOSE CROSS GIRDER (ROLLERS ONLY)

This task covers:

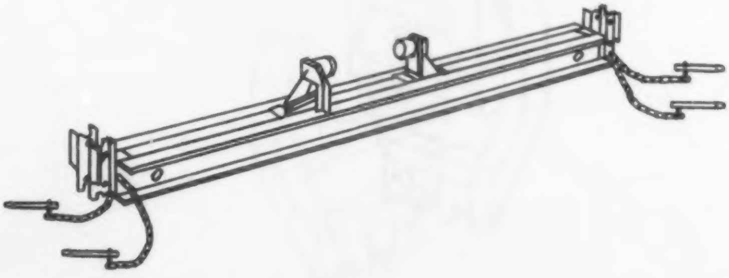
a. Inspection b. Service c. Repair

INITIAL SETUP

Materials/Parts	Condition Description
NONE	Cross girder removed from bridge or pallet load.

Tools	Personnel Required
Air compressor w/Accessories Protective Goggles General Mechanics Tool Kit	MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect rollers for cracks, breaks, dents and binding.	
SERVICE		
	Service rollers (para 4-7)	
REPAIR		
	Repair rollers by replacing defective roller with serviceable roller.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(7) LAUNCHING NOSE CROSS GIRDER (WELDED FRAME)

This task covers:

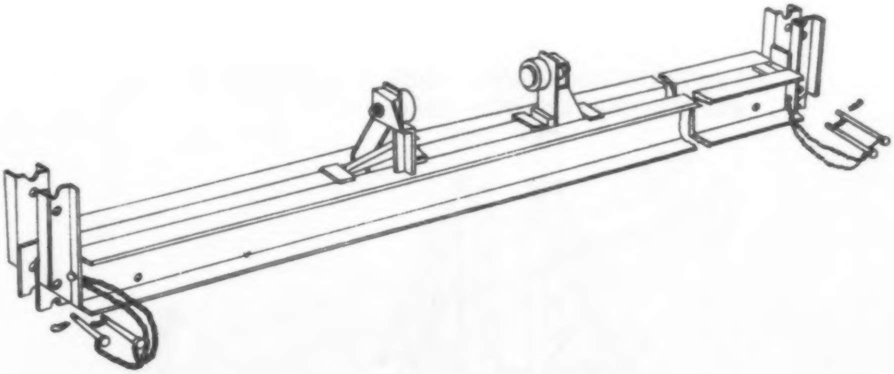
a. Inspection
b. Repair

INITIAL SETUP

Materials/Parts	Condition Description
NONE	Cross girder removed from bridge or pallet load.

Tools	Personnel Required
General Mechanics Tool Kit	MOS 62B Construction Equipment Repairman MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect cross girder for cracks, breaks, dents, broken or cracked connectors, brackets and catch.	
REPAIR		
	Repair damaged cross girder as required. For welding, refer to Appendix F.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(8) ADJUSTABLE SUPPORT

This task covers:

a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts

NONE

Tools

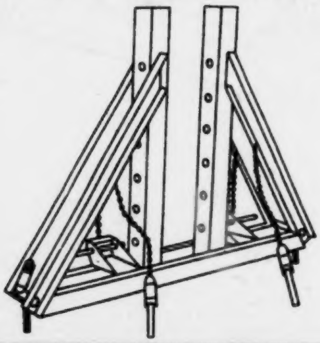
NONE

Condition Description

Support removed from bridge or pallet load.

Personnel Required

MOS 62B Construction Equipment Repairman
MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION	Inspect support for cracks, breaks, missing pins, bent screws and distortion.	
REPAIR	Repair damaged support as required. For welding, refer to Appendix F.	
REPLACE	Replace non-repairable support with serviceable support. 	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(9) BUILDING FRAME CROSS GIRDER

This task covers:

a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts

NONE

Tools

NONE

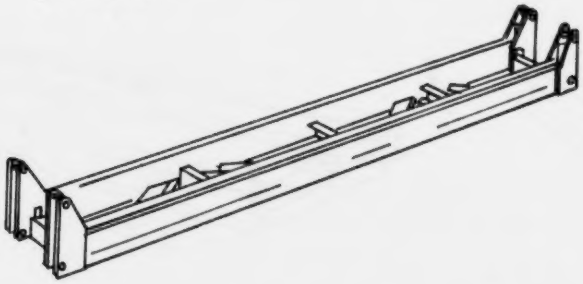
Condition Description

Cross girder removed from bridge or pallet load.

Personnel Required

MOS 62B Construction Equipment Repairman
MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect cross girder for cracks, breaks, broken brackets, and distortion.	
REPAIR		
	Repair damaged cross girder by welding. Refer to Appendix F for welding instructions.	
REPLACE		
	Replace non-repairable cross girder with serviceable cross girder.	



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4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(10) BASEPLATE (FIXED AND ADJUSTABLE SUPPORT)

This task covers:

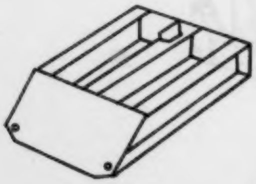
a. Inspection b. Repair c. Replace

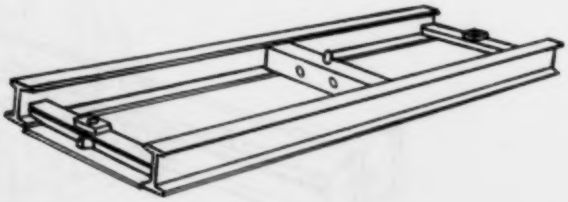
INITIAL SETUP

Materials/Parts	Condition Description
NONE	Baseplate removed from bridge or pallet load.

Tools	Personnel Required
NONE	MOS 62B Construction Equipment Repairman MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect baseplate for cracks, dents, broken or craked connectors and brackets.	
REPAIR		
	Repair damaged baseplate as required. For welding, refer to Appendix F.	
REPLACE		
	Replace non-repairable baseplate with serviceable baseplate	





4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(11) PUSH BAR AND ADAPTER

This task covers:

a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts	Condition Description
NONE	Push bar and adapter disconnected from truck and bridge.

Tools	Personnel Required
NONE	MOS 62B Construction Equipment Repairman MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect push bar and adapter for cracks, breaks and distortion. **CAUTION** Do not apply heat or straighten by the use of a hammer.	
REPAIR		
	1. Repair cracked or broken push bar or adapter by placing in a vise and welding. Refer to Appendix F for welding instructions.	
REPLACE		
	1. Replace defective (bent) push bar and adapter with a serviceable-like item.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(12) PUSH BAR CROSS GIRDER

This task covers:

a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts

NONE

Tools

NONE

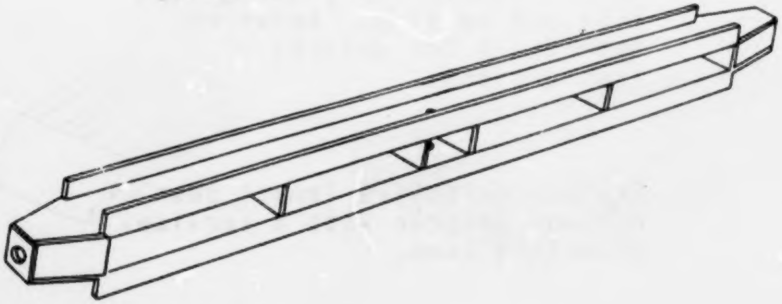
Condition Description

Cross girder removed from bridge or pallet load.

Personnel Required

MOS 62B Construction Equipment Repairman
MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect cross girder for cracks, breaks, dents and distortion.	
REPAIR		
	Repair damaged push bar cross girder as required. For welding, refer to Appendix F.	
REPLACE		
	Replace non-repairable cross girder with serviceable cross girder.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(13) PALLET AND ADAPTER (WELDED FRAME)

This task covers:

a. Inspection b. Repair

INITIAL SETUP

Materials/Parts

NONE

Tools

NONE

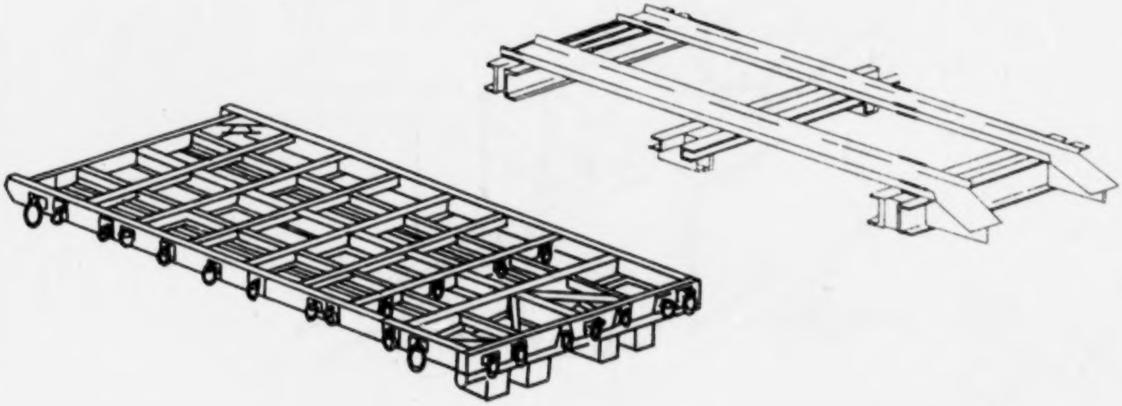
Condition Description

Pallet on raised flat surface.

Personnel Required

MOS 62B Construction Equipment Repairman
MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect pallet and adapter for cracks, breaks, dents, bent or broken connectors, brackets and distortion.	
REPAIR		
	Repair damaged pallets and adapters as required. For welding, refer to Appendix F.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(14) PALLET (LIFTING RINGS).

This task covers:

a. Removal	c. Repair
b. Inspection	d. Installation

INITIAL SETUP

Materials/Parts

NONE

Tools

General Mechanics Tool Kit

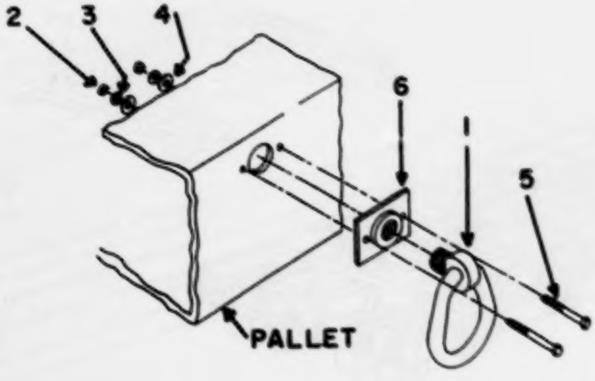
Condition Description

Pallet on flat surface.

Personnel Required

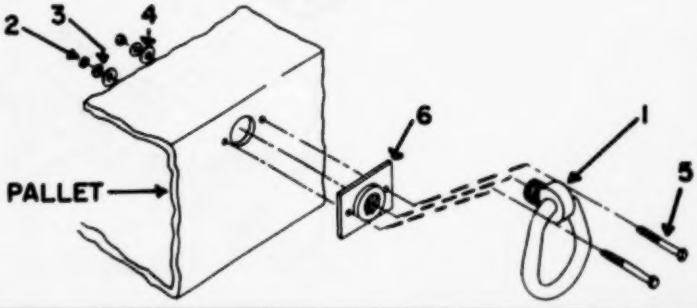
MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
	1. Remove pear link lifting ring (1) from the faceplate (6) by turning it in a counter-clockwise direction. If threads are tight, a lever may be required.	
	2. Remove nuts (2) from bolts (5).	
	3. Remove lockwashers (3).	
	4. Removes flat washers (4).	
	5. Hold faceplate (6) and remove bolts (5).	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(14) PALLET (LIFTING RINGS) (Cont)

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	1. Inspect all threaded parts for damaged threads, cracks and corrosion.	
	2. Inspect all parts for breaks, cracks and other damage.	
	3. Inspect nuts and bolts for damage to wrench face.	
	4. Inspect lockwashers to ensure a helical rather than a flat shape.	
REPAIR		
	Replace all parts as necessary.	
INSTALLATION		
	1. Hold faceplate (6) over mounting holes in pallet.	
	2. Insert bolts (5) through holes in faceplate (6).	
	3. Place flat washer (4) on each bolt (5).	
	4. Place lockwasher (3) on each bolt (5).	
	5. Place nuts (2) on bolts (5) and tighten.	
	6. Replace pear link lifting ring (1) in faceplate (6) by engaging threads and turning it in a clockwise direction. If threads are tight, a lever may be required. 	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(15) PALLET (TIE-DOWN RINGS)

This task covers:

a. Removal
b. Inspection
c. Repair
d. Installation

INITIAL SETUP

Materials/Parts

NONE

Tools

General Mechanics Tool Kit

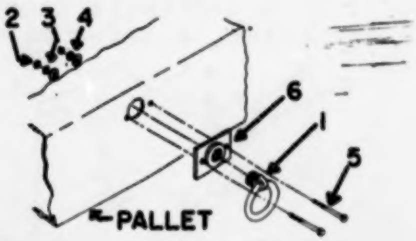
Condition Description

Pallet on raised flat surface.

Personnel Required

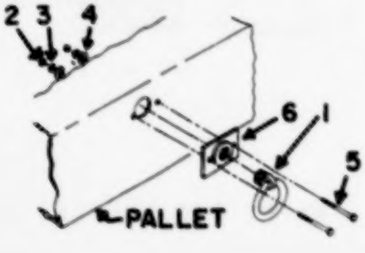
MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
	1. Remove pear link lifting ring (1) from the faceplate (6) by turning it in a counter-clockwise direction. If threads are tight, a lever may be required.	
	2. Remove nuts (2) from bolts (5).	
	3. Remove lockwashers (3).	
	4. Remove flat washers (4).	
	5. Hold faceplate (6) and remove bolts (5).	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(15) PALLET (TIE-DOWN RINGS) (Cont)

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	1. Inspect all threaded parts for damaged threads, cracks and corrosion.	
	2. Inspect all parts for breaks, cracks and other damage.	
	3. Inspect nuts and bolts for damage to wrench face.	
	4. Inspect lockwashers to ensure a helical rather than a flat shape.	
REPAIR		
	Replace all parts as necessary.	
INSTALLATION		
	1. Hold faceplate (6) over mounting holes in pallet.	
	2. Insert bolts (5) through holes in face-plate (6).	
	3. Place a flat washer (4) on each bolt (5).	
	4. Place a lockwasher (3) on each bolt (5).	
	5. Place nuts (2) on bolts (5) and tighten.	
	6. Replace pear link lifting ring (1) in faceplate (6) by engaging threads and turning in a clockwise direction. If threads are tight, a lever may be required.	
		

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(16) PALLET (SHACKLES)

This task covers:

a. Removal
b. Inspection
c. Repair
d. Installation

INITIAL SETUP

Materials/Parts

NONE

Tools

General Mechanics Tool Kit

Condition Description

Pallet on flat surface.

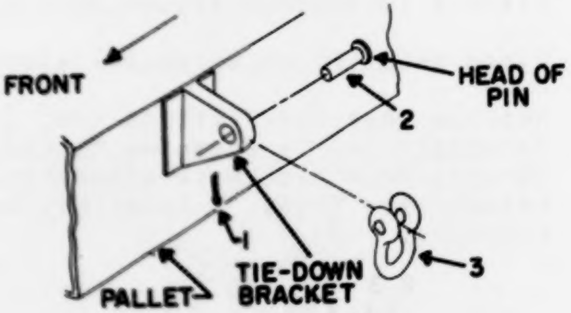
Personnel Required

MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

1. Straighten prongs of cotter pin (1) remove from retaining pin (2).
2. Hold shackle (3) and remove retaining pin (2).



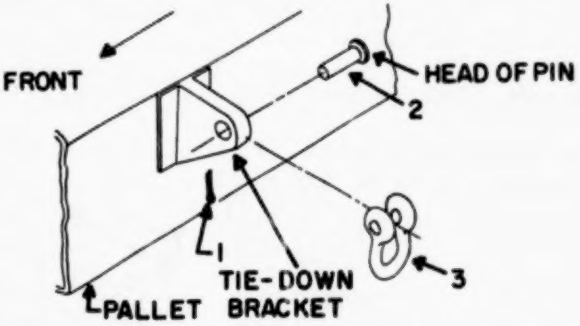
INSPECTION

Inspect all parts for breaks, cracks and other damage.

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(16) PALLET (SHACKLES) (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR		
	1. Repair tie down bracket as required. Refer to Appendix F for welding.	
	2. Replace all parts as required.	
INSTALLATION		
	1. Slide shackle (3) over tiedown bracket so that holes are aligned.	
	2. Insert retaining pin (2) through shackle (3) holes. The head of retaining pin must be on opposite side of tiedown bracket from pallet shock absorbers.	
	3. Place cotter pin (1) through hole in retaining pin (2).	
	4. Bend prongs of cotter pin (1) in opposite directions wrapping them around the retaining pin (2).	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(17) PALLET (RUBBER BUMPER)

This task covers:

- a. Removal
- b. Inspection
- c. Repair
- d. Installation

INITIAL SETUP

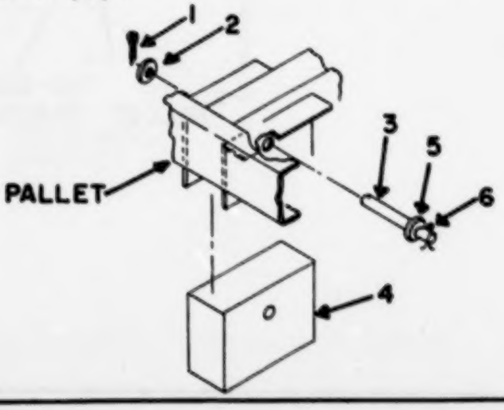
Materials/Parts	Condition Description
NONE	Pallet on flat surface.

Tools	Personnel Required
General Mechanics Tool Kit	MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

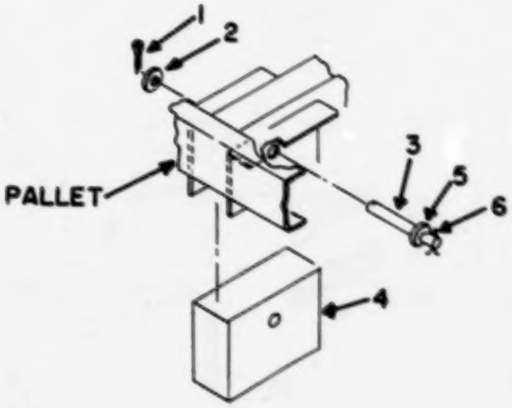
1. Straighten prongs of cotter pin (1), remove from tube (3).
2. Remove flatwasher (2).
3. Remove shock absorber tube (3) from pallet. Shock absorber (4) will be free when tube (3) is removed.
4. Slide flat washer (5) off tube.
5. Straighten prongs of cotter pin (6) and remove it from tube (3).



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(17) PALLET (RUBBER BUMPER) (Cont)

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect all parts for breaks, cracks and other damage.	
REPAIR		
	Replace all parts as necessary.	
INSTALLATION		
	1. Place cotter pin (6) through hole in shock absorber tube (3).	
	2. Bend prongs of cotter pin (6) in opposite directions wrapping them around tube (3).	
	3. Slide flat washer (5) on tube (3) at opposite end from cotter pin (6).	
	4. Line up hole in shock absorber (4) with holes in pallet and insert tube (3).	
	5. Slide flat washer (2) on free end of tube (3).	
	6. Place cotter pin (1) through hole in shock absorber tube (3).	
	7. Bend prongs of cotter pin (1) in opposite directions wrapping them around tube (3).	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK

This task covers:

a. Inspection b. Repair c. Service

INITIAL SETUP

Materials/Parts	Condition Description
Lubricating Oil MIL-L-7870A	Jack removed from pallet load.

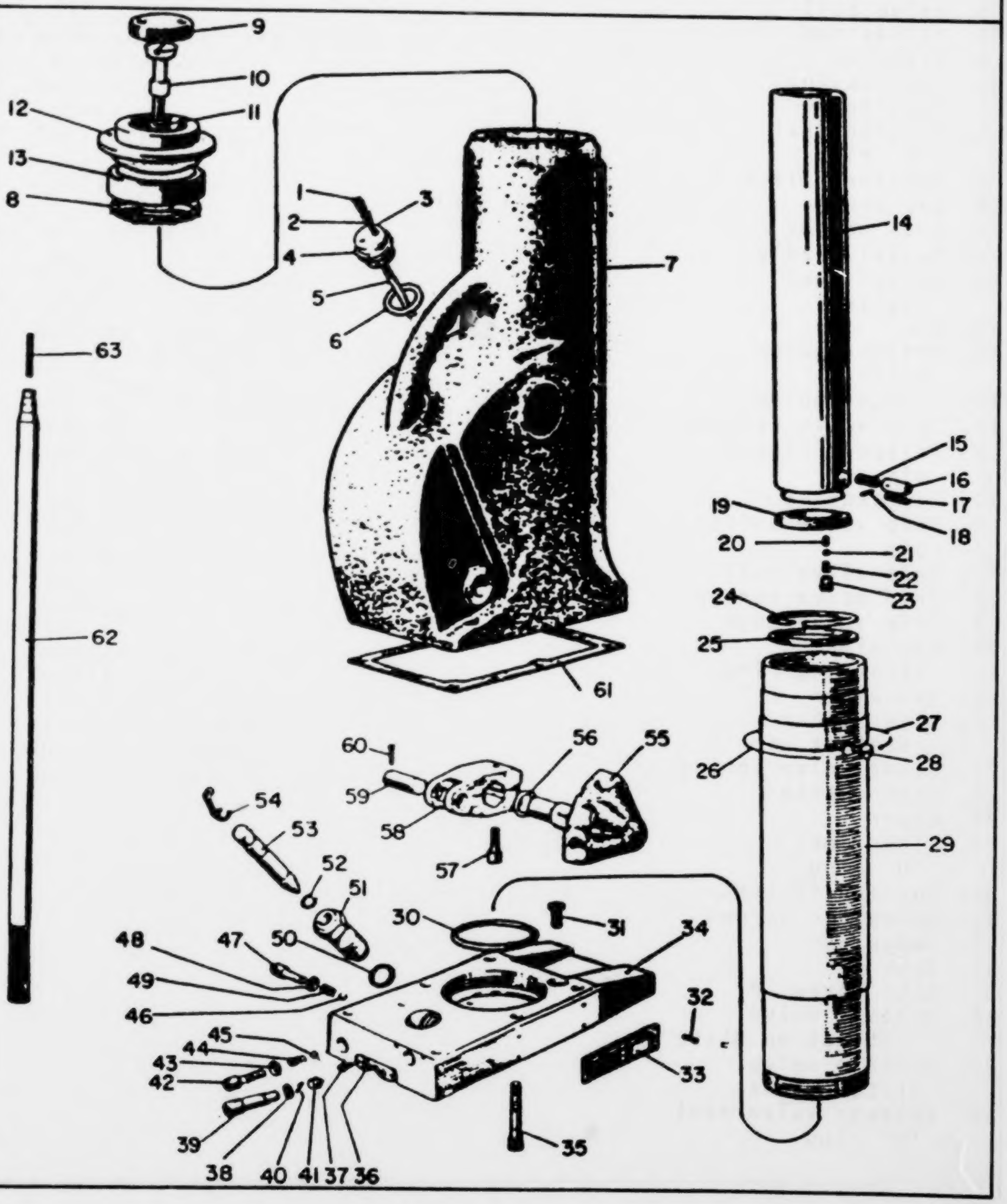
Tools	Personnel Required
General Mechanics Tool Kit Air Compressor w/Accessories Protective Goggles	MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect hydraulic jack for leaks, cracks, breaks, damaged or missing parts.	
REPAIR		
	Repair consists of removing bad parts and replacing serviceable parts.	
	a. Disassembly	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

1. Retaining screw
2. Valve spring
3. Valve ball
4. Filler cap
5. Dipstick
6. Seal washer
7. Housing
8. Housing seal 'O' ring
9. Retainer plate
10. Cap pin
11. Lock washer
12. Swivel cradle
13. Swivel head seating
14. Ram
15. Trigger guide spring
16. Trigger guide
17. Trip valve trigger
18. Tripper fulcrum pin
19. Ram packing
20. Trip valve lifter pin
21. Trip valve ball
22. Trip valve spring
23. Trip valve cage
24. Ram wiper retaining ring
25. Ram wiper
26. Liner valve retainer wire
27. Liner valve spring
28. Liner valve
29. Liner
30. Liner seal 'O' ring
31. Suction filter
32. Nameplate screws
33. Nameplate
34. Base
35. Base screw
36. Release valve instruction plate
37. Release valve plate screws
38. Release valve seal 'O' ring

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

39. Release valve screw
40. Release valve tip
41. Release valve tip securing pin
42. Delivery valve screw
43. Delivery valve seal
44. Delivery valve spring
45. Delivery ball valve
46. Suction ball valve
47. Suction valve srew
48. Suction valve seal
49. Suction valve spring
50. Pump barrel seal
51. Pump barrel
52. Pump plunger seal
53. Pump plunger
54. Pump plunger clip
55. Quadrant
56. Quadrant shaft seal 'O' ring
57. Tumbler pinch srew
58. Tumbler
59. Tumbler roller
60. Tumbler roller split pin
61. Reservoir gasket
62. Operating lever
63. Operating key

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)	**CAUTION** Special care must be taken when disassembling components to ensure freedom from grit, etc. Valve seats and mating surfaces must be kept free from scratches and other damage. (1) Loosen release valve screw (39) 1-1/2 turns and press ram down as far as it will go. (2) Remove filler cap (4) and inspect seal washer (6). **WARNING** When using compressed air, wear safety goggles or glasses and ensure air blast is not directed toward another person. (3) Remove screws (1), springs (2) and balls (3); blow through valve with compressed air.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)		
	(4) Drain oil into suitable container, approximately 2-5/8 pints (1-1/2 liters).	
	(5) Remove and inspect retainer plate (9), cap pin (10), swivel cradle (12) and swivel head seating (13).	
	(6) Remove release valve instruction plate (36).	
	(7) Remove release valve screw (39).	
	(8) Remove release valve seal (38) and inspect.	
	(9) Remove release valve tip securing pin (40) and inspect for burrs.	
	(10) Remove release valve tip (41) and inspect for damage.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)		
	(11) Remove and inspect delivery valve screw (42), seal (43), spring (44) and valve (45).	
	(12) Remove and inspect suction valve screw (47), seal (48), spring (49), and valve (46).	
	(13) Remove base screws (35) and inspect threads and hexagon sockets for distortion.	
	(14) Using aluminum or hardwood block, tap the top of the liner (29) down approximately 3/4 inch.	
	(15) Put hand inside housing and release pump plunger clip (54) from over tumbler roller (59).	
	(16) Rotate tumbler (61) assembly upwards.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)		
	(17) Press pump plunger (53) down into pump barrel (51).	
	(18) Housing (7) will now be free to lift off liner (29) and inspect reservoir gasket (61), housing seal (8), seating and liner hole. Ensure that pump plunger clip (54) has retaining wire around it.	
	(19) Loosen tumbler pinch screw (57).	
	(20) Pull out pump quadrant shaft (55) and inspect O-ring seal (56), shaft hole in housing and quadrant	
	(21) Remove tumbler roller (59) and tumbler (58)and inspect.	

WARNING

When using compressed air, wear safety goggles or glasses and ensure air blast is not directed toward another person.

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(29) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)		
	(22) Remove liner valve (28), spring (27) and retaining wire (26) and blow through liner with compressed air.	
	(23) Remove pump plunger (53), inspect seal (52), and plunger body for scoring.	
	(24) Remove pump barrel (51), inspect O-ring seal (50), and barrel bore for scoring.	
	(25) Remove suction filter (31) and clean.	
	(26) To remove base (34), grasp liner (29), in vise with soft jaws, or in a strap wrench, and tap base with aluminum or hardwood block (right hand thread).	
	(27) Inspect liner (29) and liner seal O-ring (30).	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)	**WARNING** When using compressed air, wear safety goggles or glasses and ensure air blast is not directed toward another person. (28) Blow through base oil-ways with compressed air. (29) Inspect all seals and valve seats for damage. (30) Push ram (14) out of bottom of liner (29) and inspect. (31) Remove and inspect ram wiper (25). (32) Remove and inspect trip valve cage (23), spring (22), ball (21), and lifter pin (20). (33) Remove trigger guide (16) and inspect for scoring. (34) Remove trip valve trigger (17) and inspect for nose wear.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)		
	(35) Remove trigger fulcrum pin (18) and inspect.	
	(36) Remove trigger guide spring (15) and inspect.	
	WARNING	
	When using compressed air, wear safety goggles or glasses and ensure air blast is not directed toward one person.	
	(37) Blow out valve with compressed air.	
	(38) Remove and inspect ram packing (19).	
	(39) Inspect ram for scoring and trip valve groove for damage.	
	b. Assembly. Reassemble in reverse order of disassembly and the following:	
	(1) When assembling components, smear bearing surfaces and seals with hydraulic oil, MIL-L-7078A to prevent initial scuffing.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)		
	(2) Ensure that trigger guide (16) is assembled with cut out at the bottom, i.e., ram packing (19) end of ram (14).	
	(3) Ensure that trip valve trigger (17) has the 30-degree angle face to the bottom of ram (14).	
	(4) Ensure that trip valve lifter pin (20) has the flat end resting on the trip valve ball (21).	
	(5) Ensure that ram wiper (25) internal angle face is facing the bottom of liner (29). Insert ram (14) from bottom of liner (29).	
	(6) When assembling the tumbler (58) in the housing (7), ensure that the shaft is in the correct angular position and locate the tumbler (58) on the shaft to allow axial movement of approximately 0.020 in (0.5 mm).	
	(7) When refitting housing (7), ensure that pump plunger clip (54) is to the outside of tumbler roller (59).	
	(8) Springs on the suction and delivery valves are to be assembled with the smaller diameter end next to the ball.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
REPAIR (Cont)		
	(9) Replace lockwasher (11) on cap pin (10).	
	(10) Do not overtighten housing. Housing is of cast aluminum alloy construction. This material is prone to cracking if over tightened.	
	(11) Fill to level indicated on dipstick with fresh clean hydraulic oil MIL-L-7870A only. After refilling, remove any air which may be trapped in the system as follows:	
	(12) Operate pump until ram has risen two to three inches.	
	(13) Unscrew release valve screw no more than 1-1/2 turns.	
	(14) Press ram down as far as it will go. Repeat these operations five times.	
	c. Testing. Each jack shall be tested. Use the operating lever supplied to lift and lower an 18 ton load over the complete range of movement.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(18) HYDRAULIC JACK (Cont)

LOCATION/ITEM	ACTION	REMARKS
SERVICE		
	Service by checking fluid level and filling to capacity of 2-5/8 pints (1-1/2 liters). Refer to paragraph 4-7 for service. **NOTE** Reservoir filler cap incorporates a dipstick for gaging the fluid level.	

4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(19) LAUNCHING NOSE CROSS GIRDER POST

This task covers:

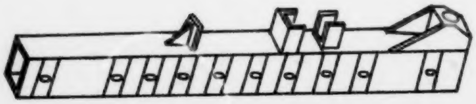
a. Inspection b. Repair c. Replace

INITIAL SETUP

Materials/Parts	Condition Description
NONE	Post removed from bridge or pallet load.

Tools	Personnel Required
NONE	MOS 62B Construction Equipment Repairman MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect post for cracks, breaks, broken or bent lugs and connectors.	
REPAIR		
	1. Repair damaged post as required. For welding, refer to Appendix F.	
REPLACE		
	1. Replace non-repairable post with serviceable post.	



4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(20) EXTRACTOR CABLE AND LIFTING SING

This task covers:

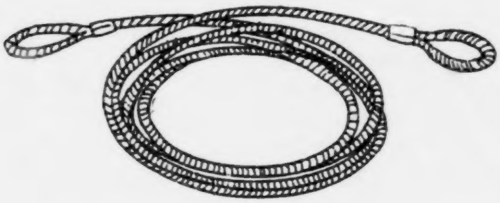
a. Inspection b. Repair

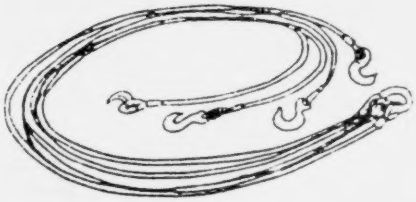
INITIAL SETUP

Materials/Parts	Condition Description
NONE	Cable/sling removed from pallet

Tools	Personnel Required
NONE	MOS 62B Construction Equipment Repairman

LOCATION/ITEM	ACTION	REMARKS
INSPECTION	Inspect cable/sling for frayed or cut cable, broken or missing hooks and broken connectors.	
REPAIR	1. Replace defective cable/sling with serviceable-like item. 2. Report full details of damage to DS maintenance.	





4-14. MAINTENANCE OF BRIDGE AND ERECTION SET COMPONENTS (Cont).

(21) EQUIPMENT BASKET

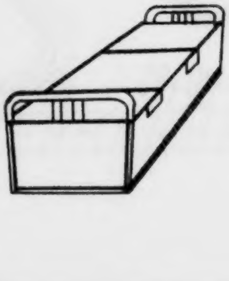
This task covers:

a. Inspection　　b. Repair　　c. Replace

INITIAL SETUP

Materials/Parts	**Condition Description**
NONE	Basket removed from pallet.
Tools	**Personnel Required**
NONE	MOS 62B Construction Equipment Repairman MOS 44B Metal Worker

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
	Inspect basket for cracked or broken pins, broken hinges, cracked or broken welds and loose screen.	
REPAIR		
	1. Repair basket as required. For welding, refer to Appendix F.	
REPLACE		
	1. Replace non-repairable basket with serviceable basket.	



APPENDIX A
REFERENCES

A-1. Lubrication

C9100IL	Identification List of Fuels, Lubricants, Oils and Waxes
LO 9-2320-260-12	Lubrication Order: 5-Ton, 6 X 6, Truck, M817
LO 9-2330-287-14	Bolster Trailers: 4-Ton, 4-Wheel, M-796

A-2. Maintenance

TM 5-232	Elements of Surveying
TM 5-312	Military Fixed Bridges
TM 5-5450-11	Air Transport of Supplies and Equipment: Helicopter External Loads Rigged with Air Delivery Equipment
TM 5-725	Rigging
TM 9-2320-260-10	Operators Manual: 5-Ton, 6 X 6, Truck, M817
TM 9-2330-287-14	Bolster Trailers: 4-Ton, 4-Wheel, M796
TM 738-750	The Army Maintenance Management Systems (TAMMS)

A-3. Painting

TM 43-0139	Painting Instructions for Field Use

A-4. Shipment and Storage

TM 740-90-1	Administrative Storage of Equipment
TM 746-185	Procedures for Rapid Deployment and Retrograde for Military Bridging

A-5. Destruction of Materiel to Prevent Enemy Use

TM 750-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use

A-6. Field Data

FM 5-34	Engineer Field Data Manual

APPENDIX B
MAINTENANCE ALLOCATION CHART

SECTION I. INTRODUCTION

B-l. GENERAL

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. Section II designates overall responsibilities for the performance of maintenance functions on the identified end item or component and the work measurement time required to perform the functions by the designated maintenance level. The implementation of maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the tools and test equipment required for each maintenance function as referenced from Section II.

B-2. EXPLANATION OF COLUMNS IN SECTION II

a. Column (1), Group Number. Column 1 lists group numbers to identify related components, assemblies, subassemblies, and modules with their next higher assembly. The applicable groups are listed in the MAC in disassembly sequence beginning with the first group removed.

b. Column (2), Component/Assembly. This column contains the noun names of components, assemblies, subassembies and modules for which maintenance is authorized.

c. Column (3), Maintenance Functions. This column lists the functions to be performed on the item listed in Column 2. The maintenance functions are defined as follows:

(1) Inspect. To determine serviceability of an item by comparing its physical, mechanical, and/or electical characteristics with established standards through examination.

(2) Test. To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

(3) Service. Operations required periodically to keep an item in proper operating conditon, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

(4) Adjust. To maintain within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

(5) Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

(6) Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

(7) Install. The act of emplacing, seating, or fixing into position an item, part of module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

(8) Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

(9) Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item or system.

(10) Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to alike new condition.

(11) Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

d. Column (4), Maintenance Category. This column is made up of subcolumns for each category of maintenance. Work time figures are listed in these subcolumns for the lowest level of maintenance authorized to perform the function listed in Column 3. These figures indicate the average active time required to perform the maintenance under typical field operating conditons.

e. Column (5), Tools and Equipment. This column is provided for referencing by code the common tool sets (not individual tools), special tools, test and support equipment required to perform the designated functions.

SECTION II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
01	Bridge Set								
0101	Curb Set	Inspect	0.1						
		Replace	2.0						
		Repair		1.0				1	A
0102	Guide Marker Post	Inspect	0.1						
		Replace	0.1						
		Repair		1.0				1	A
0103	Deck Units	Inspect	0.1						
		Replace	0.1						
0104	Ramp Units	Inspect	0.1						
		Replace	0.1						
0105	Bankseat Beam	Inspect	0.1						
		Replace	0.1						
0106	End Taper Panel	Inspect	0.1						
		Replace	0.5						
0107	Panel Junction	Inspect	0.1						
		Replace	0.5						
0108	Shoot Bolts	Inspect	0.1						
		Service	0.2						
		Repair	1.0						B
0109	Top, Bottom Panel	Inspect	0.1						
		Replace	1.0						
0110	Compression Bushing	Inspect	0.1						
		Replace	1.0						
		Repair							
0111	Sway Brace	Inspect	0.1						
		Replace	0.2						
		Repair		0.5				1	A
02	Bridge Launching Components								
0201	Launching Nose	Inspect		0.1					
		Replace		1.0					

SECTION II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O	F	H	D		
0202	Launching and Retrieving Rollers	Inspect	0.1						
		Service	0.1						
		Repair		0.5					
0203	Cross and Longitudinal Girders	Inspect	0.1						
		Repair		0.5					
0204	Push Bar, Cross Girder and Adapter	Inspect	0.1						
		Repair		0.5				1	A
0205	Hydraulic Jack	Inspect	0.1						
		Service	0.1						
		Repair		1.0					
0206	Launching Nose Girder and Post	Inspect	0.1						
		Repair		1.0					
03	Pallet and Adapter								
0301	Pallet	Inspect	0.1						
		Repair		1.0					
0302	Adapter	Inspect	0.1						
		Repair		1.0					
04	Support Equipment								
0401	Basket	Inspect	0.1						
		Repair		0.5					
0402	Sling	Inspect	0.1						
		Repair		0.5					
05	Roller Beams Adjustable Support								
0501	Support	Inspect	0.1						
		Repair		1.0					
0502	Base Plates	Inspect	0.1						
		Repair		1.0					

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference code	(2) Maintenance Category	(3) Nomenclature	(4) National Stock Number NSN)	(5) Tool number
1	0	Welding Set, Arc, Inert Gas Shielded LIN Y48323	3431-00-691-1415	SP9,w/ CVS-2 (88725)

SECTION IV. REMARKS

Reference code	Remarks
	Repair by welding.
A	Welding is restriced where structural strength is effected. Welding in Organizational is restricted to curbs, sway brace, push bar and adapter, and guide marker post.
B	Service is by cleaning and repainting as required.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

SECTION I. INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the Medium Girder bridge (MGB) to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The Components of End Item and Basic Issue Items List is divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and/or separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the MGB in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the MGB during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

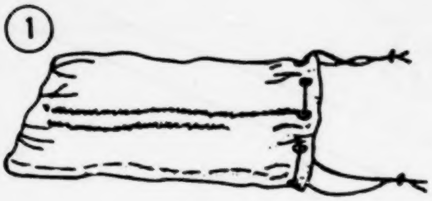
c. Column (3) -Description. Indicates the Federal item and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

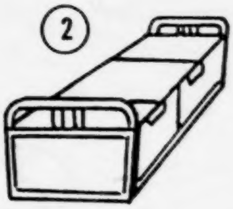
d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-charactor alphabetical abbreviation (e.g., ea, in, pr).

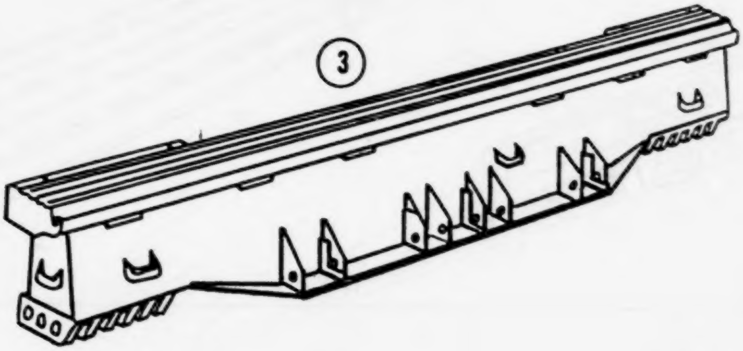
e. Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II Components of End Item

BRIDGE SET, FIXED BRIDGE, UK MGB, 103 FT LG (31.4 m)



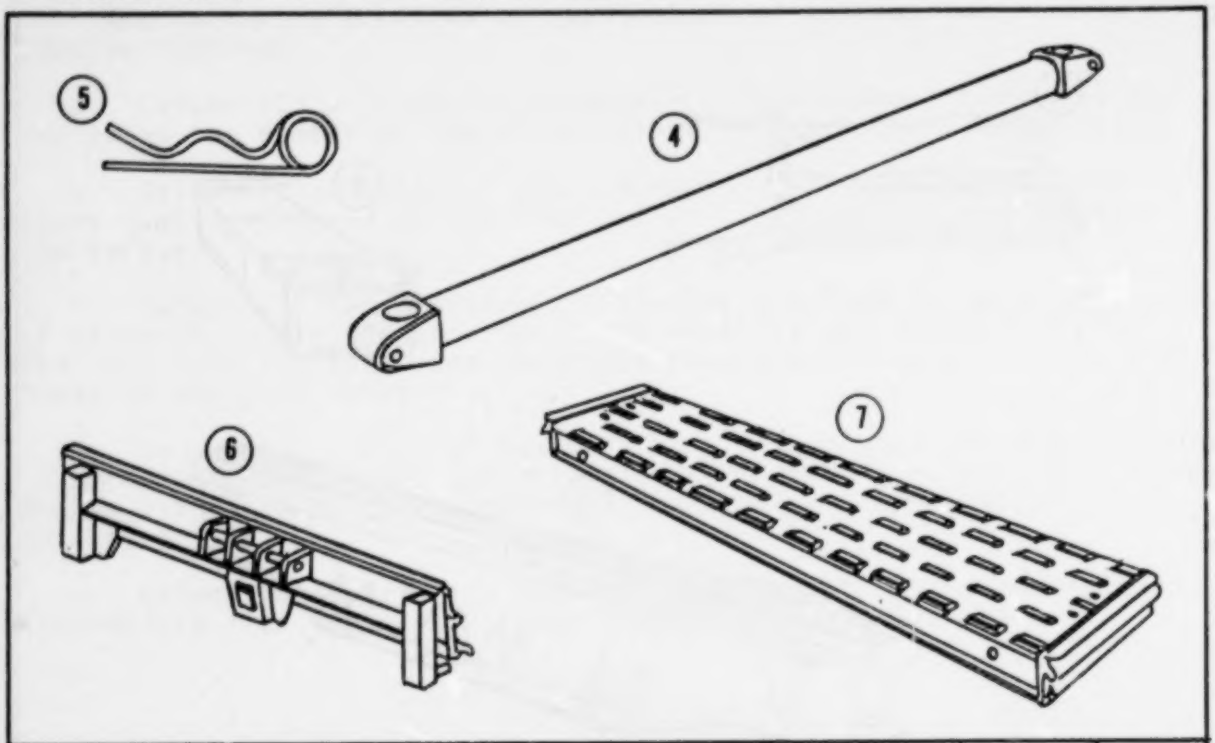




(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
1	5420-00-271-9289	Bag, Equipment: Cloth duck; cotton; 14 in lg; 10 in w, (97403) 13220E0130		EA	8
2	5420-00-271-9288	Basket Assembly Equipment: 56.6 in lg, 14.75 in w, 11.88 in deep, (97403) 13220E0140		EA	14
3	5420-00-271-9287	Beam Assembly, Bankseat: (97403) 13220E0070		EA	7

Section II Components of End Item

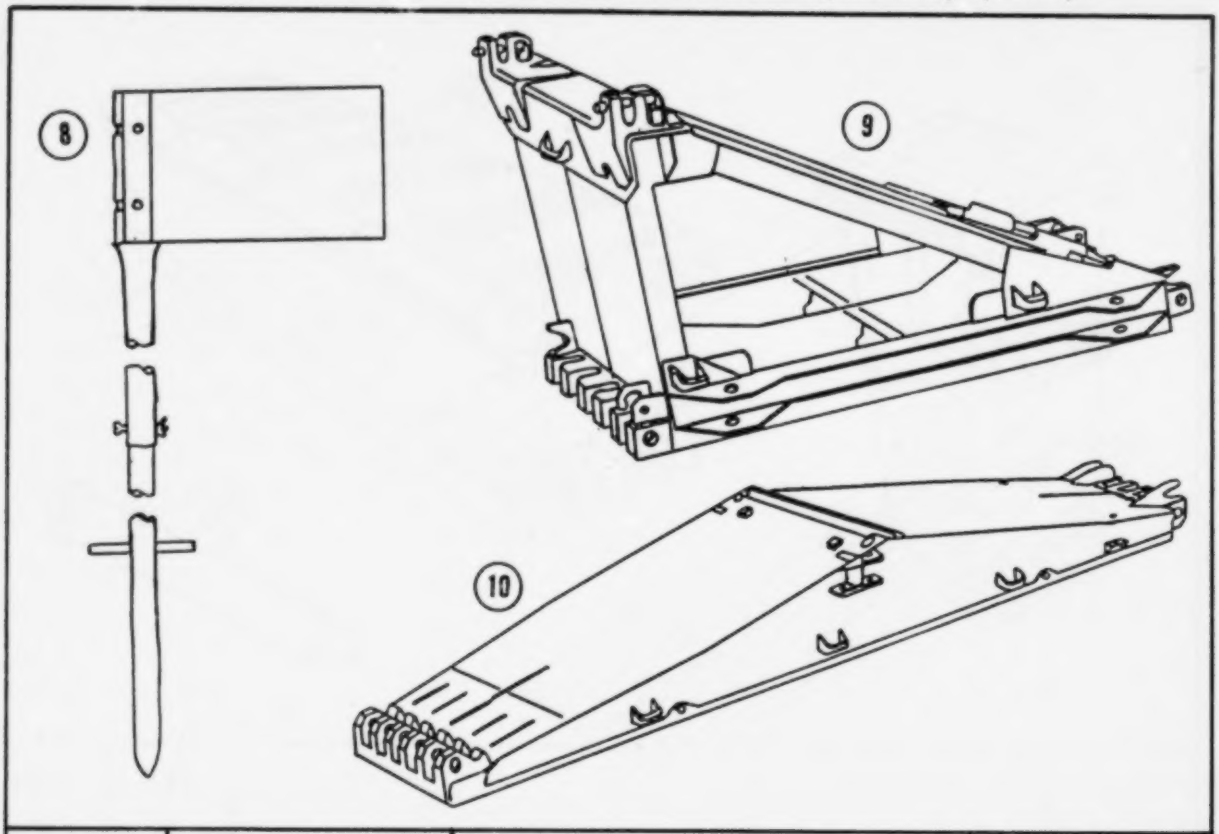
BRIDGE SET, FIXED BRIDGE, UK MGB, 103 FT LG (31.4 m) (Cont)



(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
4	5420-00-271-9286	Brace Sway: 12.88 in lg O/A, (97403) 13220E0080		EA	19
5	5315-01-081-1932	Clip, Retainer: Spring steel wire, 4.125 in nom lg, 0.120 in min dia, (97403) 13220E6245		EA	94
6	5420-00-271-9285	Curb Assembly: Aluminum alloy, 71 in lg O/A, (97403) 13220E0120		EA	42
7	5420-00-271-9284	Deck: Aluminum alloy, 109 in lg O/A, 17.25 in w O/A, 6.88 in h O/A, (97403) 13220E0090		EA	74

Section II Components of End Item

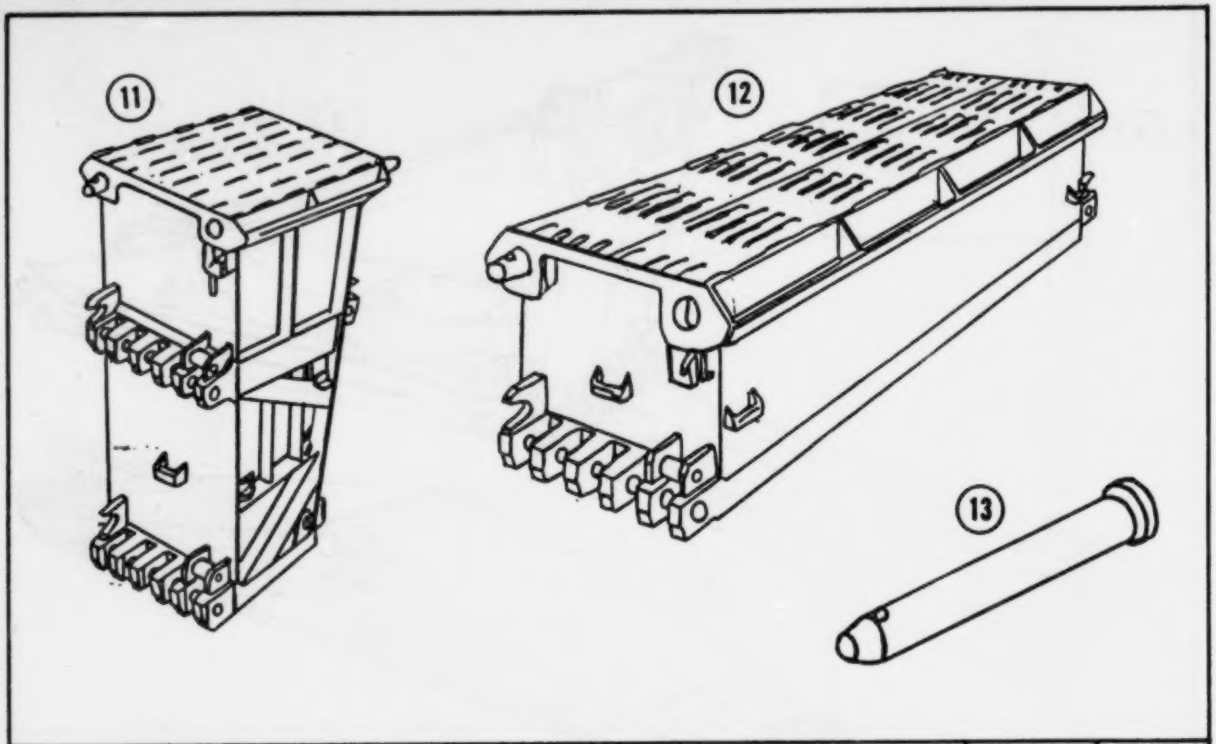
BRIDGE SET, FIXED BRIDGE, UK MGB, 103 FT LG (31.4 m) (Cont)



(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
8	5420-00-271-9283	Guide Assembly, Marker Bridge: (97403) 13220E0150		EA	24
9	5420-00-271-9291	Panel Assembly, Bottom: 77.06 in lg O/A, 26.5 in w one end, 27.0 in w other end, 43.84 in h O/A, (97403) 13220E0030		EA	26
10	5420-00-271-9293	Panel Assembly, End Taper: 158.5 in lg O/A, 28.0 in w O/A, (97403) 13220E0060		EA	5

Section II Components of End Item

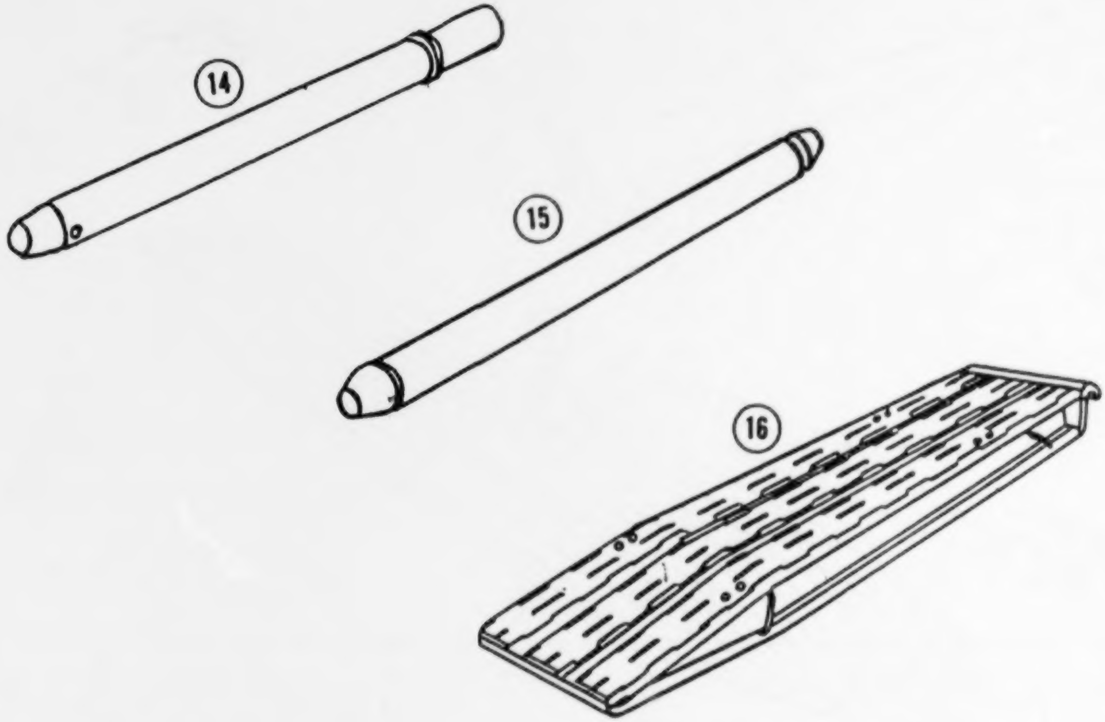
BRIDGE SET, FIXED BRIDGE, UK MGB, 103 FT LG (31.4 m) (Cont)



(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
11	5420-01-045-9755	Panel Assembly, Junction: Aluminum alloy, 35.82 in one end, 41.38 in w other end, 60.0 in h O/A, (97403) 13220E5727		EA	5
12	5420-00-271-9290	Panel Assembly, Top: 75.94 in lg O/A, 21.0 in w one end, 25.38 in w other end, 21.53 in h O/A (97403) 13220E0010		EA	34
13	5420-00-283-9053	Pin Bracing: Steel alloy, Cadmium plated, 7.25 in lg O/A, 1 in dia, (97403) (13220E0201		EA	68

Section II Components of End Item

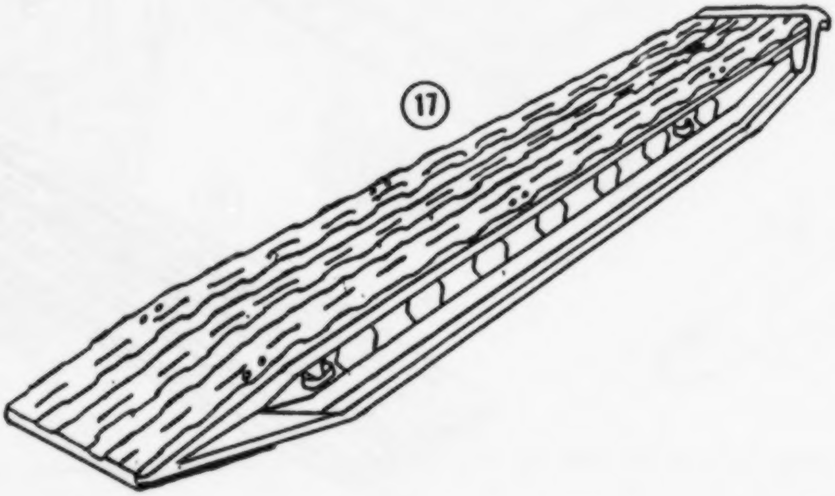
BRIDGE SET, FIXED BRIDGE, UK MGB, 103 FT LG (31.4 m) (Cont)



(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
14	5420-00-271-9280	Pin, Panel: Steel alloy, 28.25 in lg. (97403) 13220E0202		EA	92
15	5420-00-271-9279	Pin, Panel, Headless: Steel alloy, 29 in lg (97403) 13220E0200		EA	5
16	5420-01-046-2762	Ramp Assembly: Aluminum alloy, 120.45 in lg O/A, 22.375 in w, (97403) 13220E5716		EA	30

Section II Components of End Item

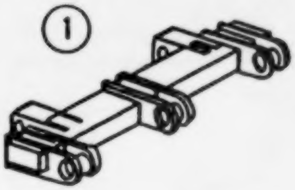
BRIDGE SET, FIXED BRIDGE, UK MGB, 103 FT LG (31.4 m) (Cont)

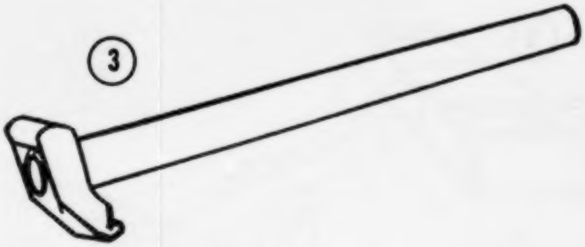


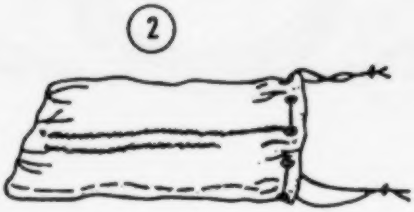
(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
17	5420-01-046-2761	Ramp Assembly: Aluminum alloy, 168.0 in lg O/A, 22.375 in w, (97403) 13220E5735		EA	26

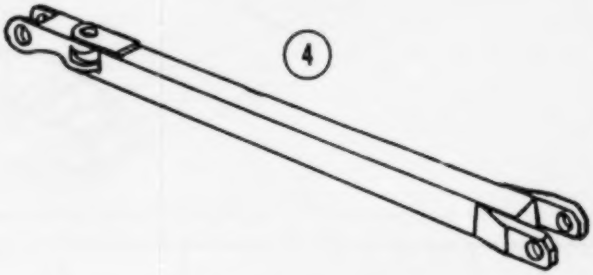
Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB





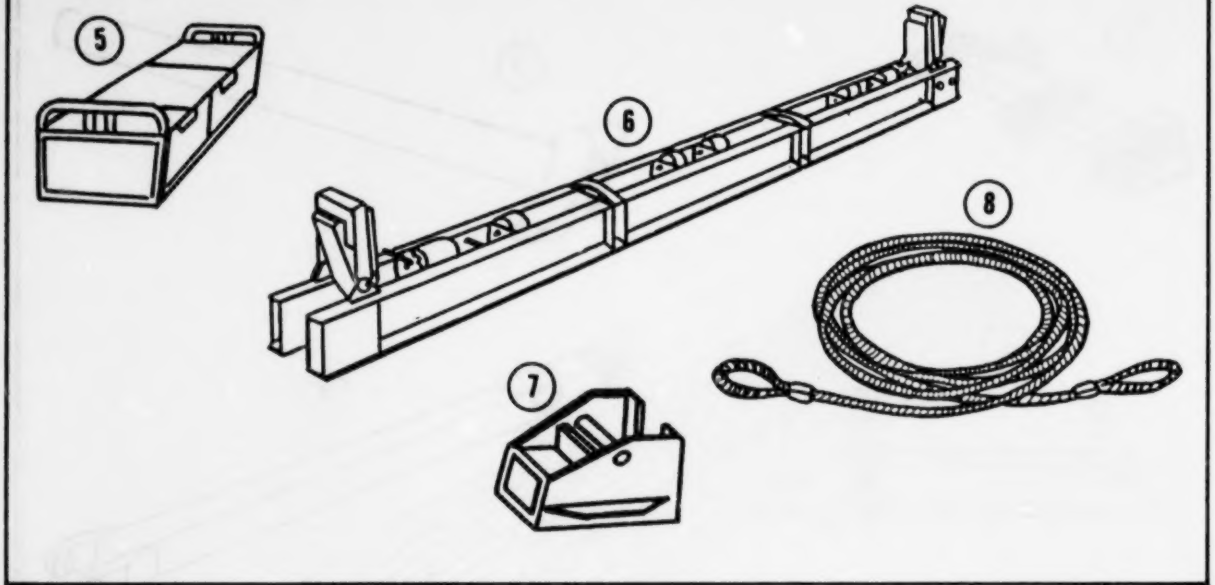




(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
1	5420-01-046-2752	Adapter, Push Bar: Aluminum alloy, 50.69 in lg O/A, 3.25 in w, (97403) 13220E5738		EA	2
2	5420-00-271-9289	Bag Equipment: Cloth, duck, cotton, 14 in lg 10 in w, (97403) 13220E0130		EA	2
3	5420-00-271-9301	Bar, Carrying: 28 in lg O/A, (97403) 13220E0420		EA	46
4	5420-00-271-9299	Bar, Assembly, Launching: 127.31 in lg O/A, (97403) 13220E0460		EA	2

Section II Components of End Item

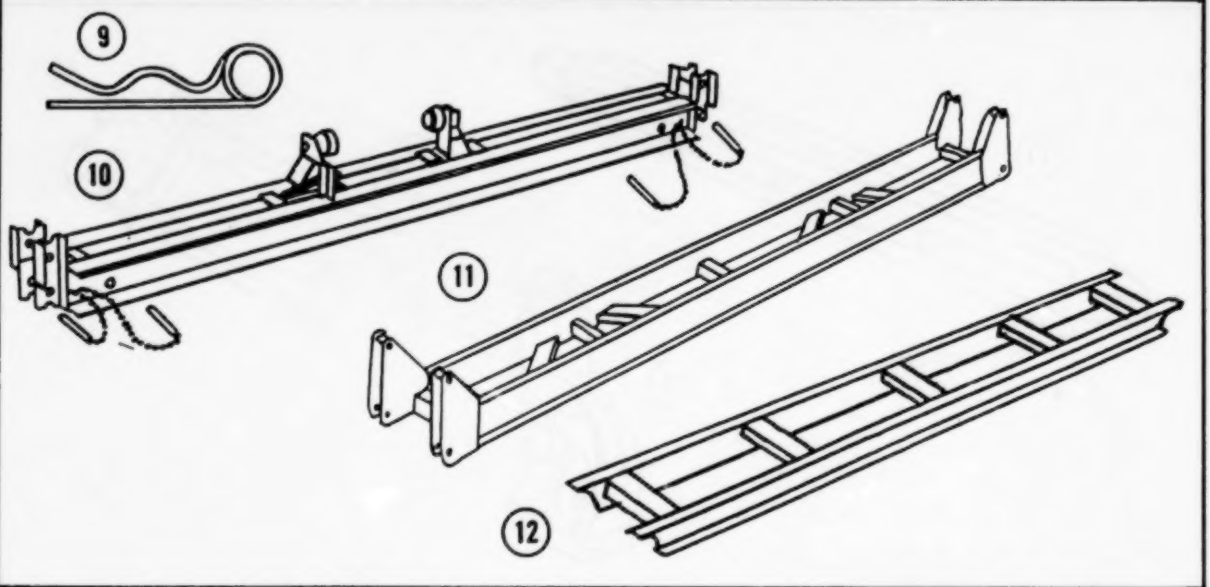
BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
5	5420-00-271-9288	Basket Assembly, Equipment: 56.6 in lg, 14.75 in w, 11.38 in deep (97403) 13220E0140		EA	6
6	5420-00-271-9298	Beam Assembly, Roller: 185.5 in lg O/A, 18 in h O/A, (97403) 13220E0530		EA	4
7	5420-00-296-9557	Bracket Assembly, Lifting: 8.93 in lg, 9.09 in w, (used with Post Assembly Jacking), (97403) 13220E0471		EA	4
8	5420-00-296-9548	Cable Extractor: Steel wire rope, 0.38 in dia, 240 in lg, (97403) 13220E2853		EA	1

Section II Components of End Item

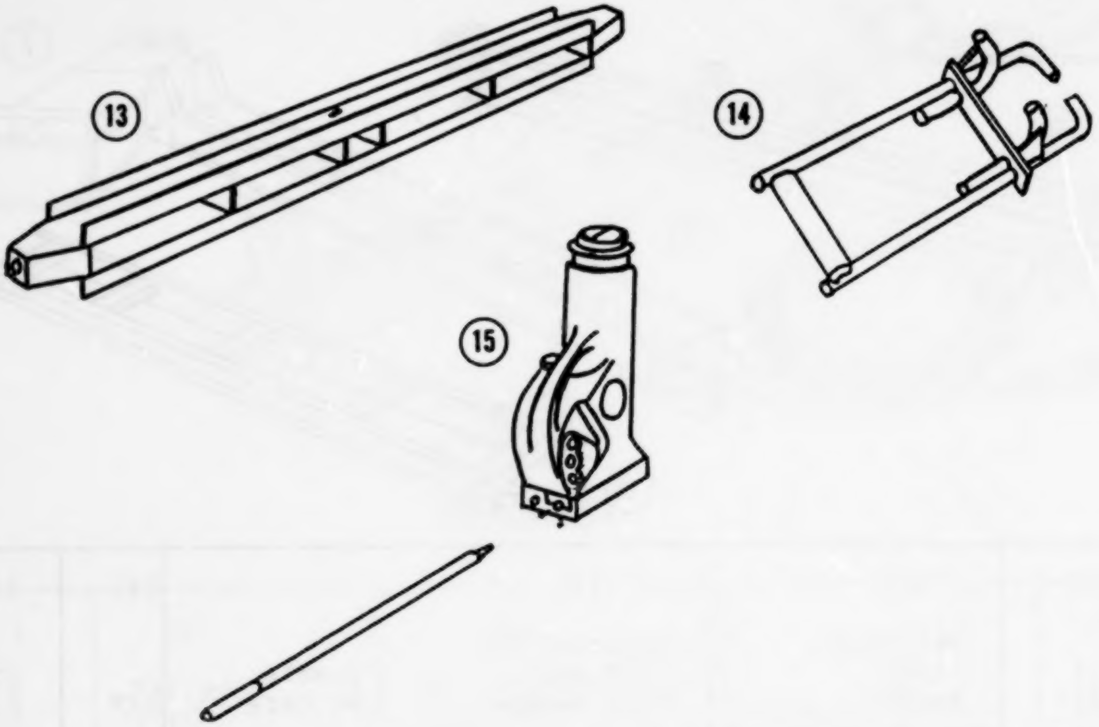
BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	(3) Usable On Code	(4) U/M	(5) Qty Rqr
9	5315-01-047-1932	Clip, Retainer: Spring steel wire, 4.125 in lg O/A, 0.120 in min dia, (97403) 13220E6245		EA	56
10	5420-00-271-9296	Girder Assembly, Launching: (97403) 13220E0320		EA	2
11	5420-00-271-9320	Girder, Cross Frame: Aluminum alloy, 171.25 in lg O/A, 19.88 in w, 15.5 in h, (97403) 13220E0390		EA	3
12	5420-00-271-9297	Girder, Longitudinal Frame: Aluminum alloy, 172.44 in lg O/A, (97403) 13220E0400 * This component not required, though issued in some sets.		EA	3*

Section II Components of End Item

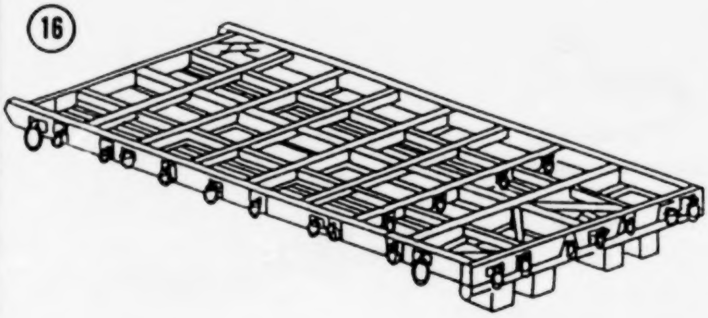
BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)

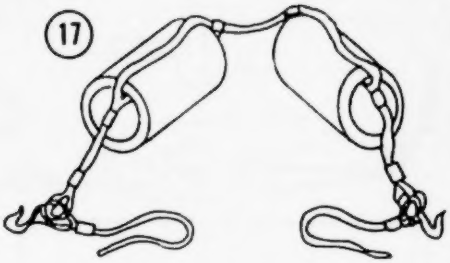


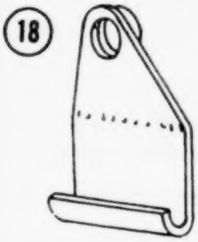
(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
13	5420-00-271-9295	Girder, Push Bar: Aluminum alloy, 110.75 in lg, 10.12 in w, 6 in h, (97403) 13220E0450		EA	2
14	5420-00-271-9294	Handle, Carrying: Aluminum alloy, (97403) 13220E0550		EA	46
15	5420-00-271-9319	Jack, Bridge, Hydraulic: Main housing aluminum alloy, operating pressure 6772 PSI, load cap 15 ton, (97403) 13220E0580		EA	7

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



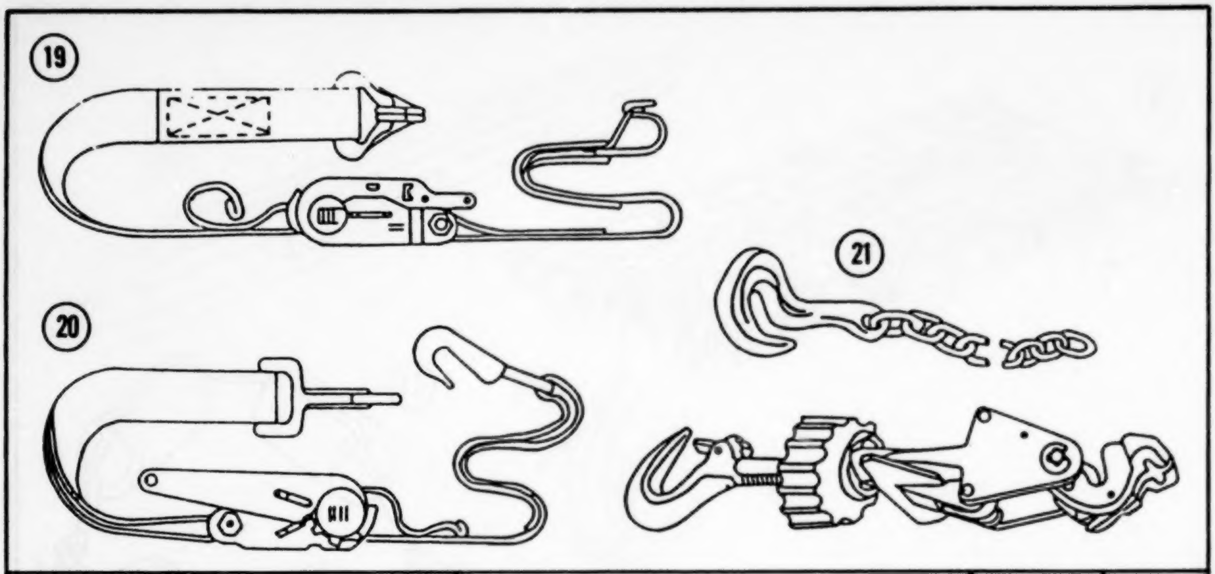




(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
16	5420-01-081-3250	Medium Girder Bridge Pallet Assembly: trk mtd, (97403) 13220E5736 consisting of:		EA	13
17	5420-00-296-9460	1 EA Rear Bumper Assembly: 105 in lg, (97403) 13219E3034			
18	5420-00-296-9469	8 EA Lug, Tie-Down: Steel, 4 in w, (97403) 13219E3027			

Section II Components of End Item

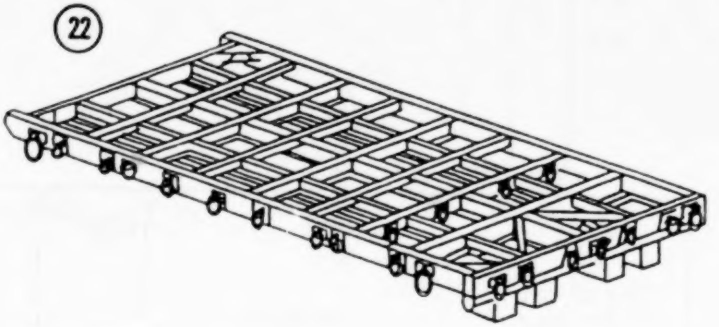
BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB, (Cont)

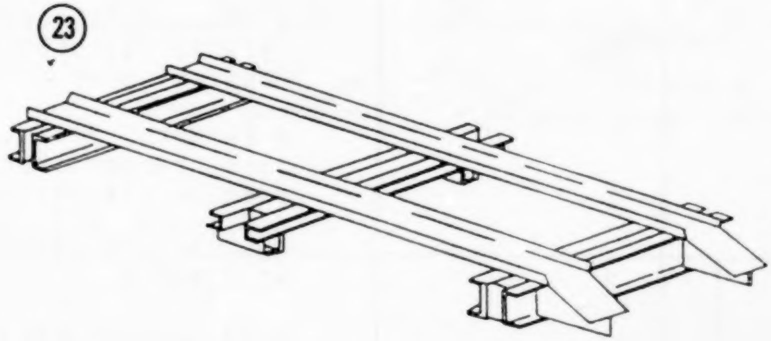


(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
19	5420-00-296-9480	4 EA Strap Assembly: Webbing, nylon, ratchet buckle and snap hooks, steel, cadmium plated, 260 in lg, 1.72 in w, 5,000 lb capacity (97403) 13219E3029-1 (01276) 311E021A260-018			
20	5420-00-296-9499	9 EA Strap Assembly: Webbing, nylon, ratchet buckle and snap hooks, steel, cadmium plated, 276 in lg, 1.75 in w, 10,000 lb capacity, (97403) 13219E3028 (01276) 3105002A276-C20			
21	1670-00-212-1149	2 EA Tie-down, Cargo, Aircraft, MB-1: 10,000 lb capacity, (02939) A-300			

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)

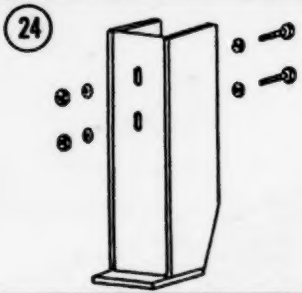




(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
22	5420-01-081-3229	Medium Girder Bridge Pallet Assembly: trlr mtd, (97403) 13220E5737 consisting of:		EA	12
23	5420-01-081-3252	1 EA Adapter: Pallet to trailer, (97403) 13220E5739			

Section II Components of End Item

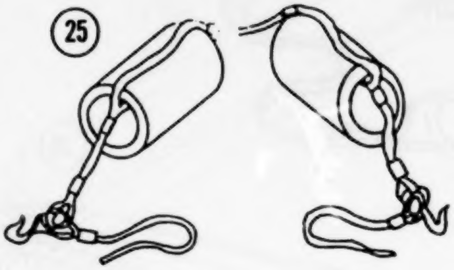
BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)

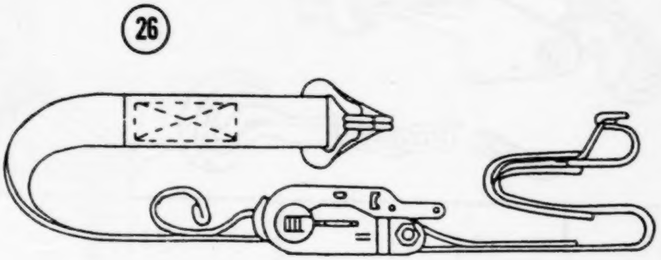


(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
24	5420-00-296-9561	4 EA Bracket, Adapter: (97403) 13219E3026 consisting of:			
		8 EA Nut: Plain, hexagon, carbon steel, cadmium plated, UNC-2B, 3/8 in-16, GRB, 5310-00-732-0558 (96906) MS 51967-8			
		8 EA Screw: Cap, hexagon head, (finished hexagon bolt), steel, Grade 5, Cadmium plated, UNC-2A, 3/8 in-16 x 1.5 in lg, 5305-00-269-3214 (96906) MS 90725-64			
		8 EA Washer: Flat-round, steel, cadmium plated, general purpose, .406 ID x .812 OD x .065 thk, 5310-00-080-6004 (96906) MS 27183-14			
		8 EA Washer: Lock-spring, helical, regular (medium) series, 3/8 in nom size, 5310-00-004-5033 (96906) MS 35338-46			

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)

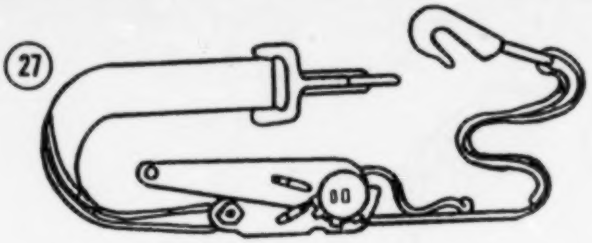


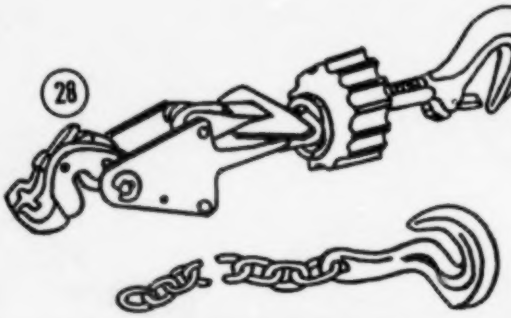


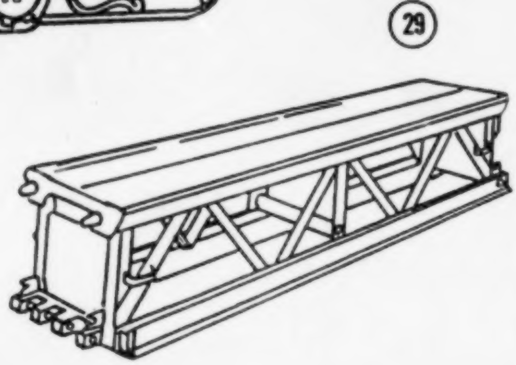
(1) Illus number	(2) National Stock Num"er	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
25	5420-00-296-9460	1 EA Rear Bumper Assembly: 105 in lg, (97403) 13219E3034			
26	5420-00-296-9480	4 EA Strap Assembly: Webbing, nylon, ratchet buckle and snap hooks, steel, cadmium plated, 260 in lg, 1.72 in w, 5,000 lb capacity, (97403) 13219A2029-1 (01276) 311E021A260-018			

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



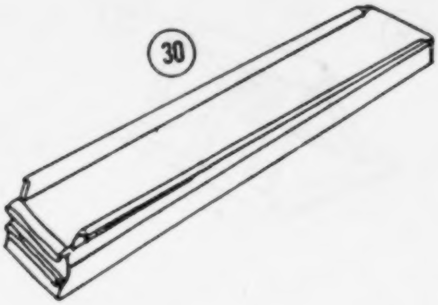


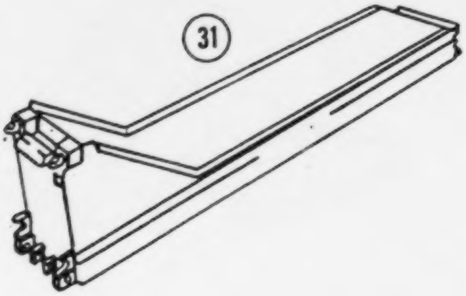


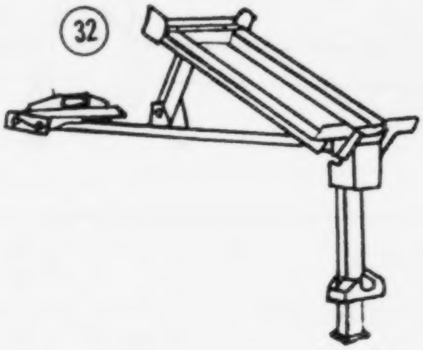
(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
27	5420-00-296-9499	9 EA Strap Assembly: Webbing, nylon, ratchet buckle and snap hooks, steel, cadmium plated, 276 in lg, 1.75 in w, 10,000 lb capacity, (97403) 13219E3028 (01276) 3105002A276-C-20			
28	1670-00-212-1149	4EA Tie-down, cargo, aircraft MB-1: 10,000 lb capacity, (02939) A-300			
29	5420-00-271-9305	Nose Assembly, Launching: 124.73 in lg O/A, 24.88 in w, 19 in h, (97403) 13220E6286		EA	8

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



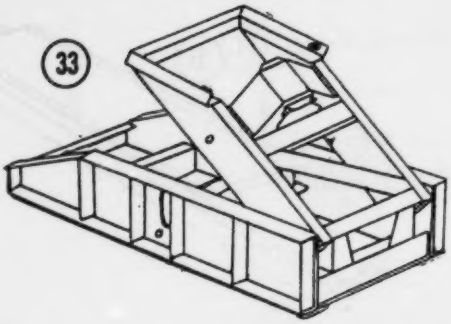


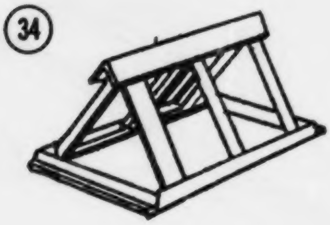


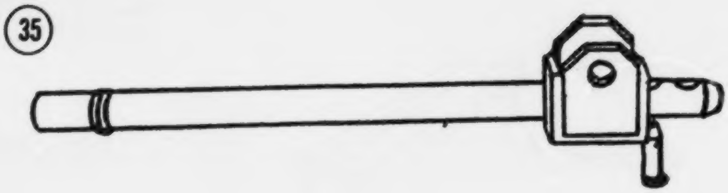
(1)	(2)	(3)		(4)	(5)
Illus number	National Stock Number	Description FSCM and Part number	Usable On Code	U/M	Qty Rqr
30	5420-01-081-0947	Nose, Light, Front, Launching: Aluminum alloy, (97403) 13220E6258		EA	5
31	5420-00-271-9304	Nose, Rear Launching: Aluminum alloy, (97403) 13220E0370		EA	5
32	5420-00-271-9300	Panel Erection Aid: (97403) 13220E0490		EA	3

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



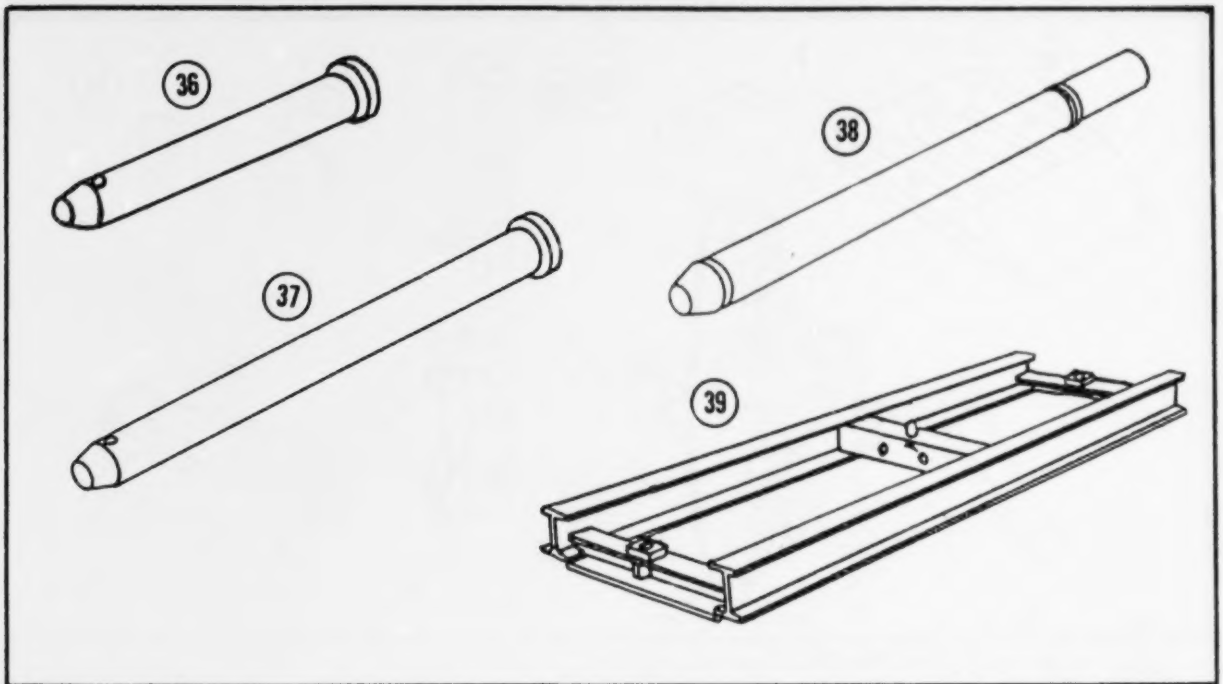




(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
33	5420-00-271-9310	Pedestal Assembly, Adjustable, Landing Roller: (97403) 13220E0480		EA	2
34	5420-00-271-9309	Pedestal, Building: Aluminum alloy, 24.5 in lg O/A, 19 in w, 16 in h, (97403) 13220E0430		EA	7
35	5420-01-081-3232	Pin, Anchorage Assembly: (NO FSCM) NO P/N * This item in quantity given is transferred from LRS set upon issue.		EA	10*

Section II Components of End Item

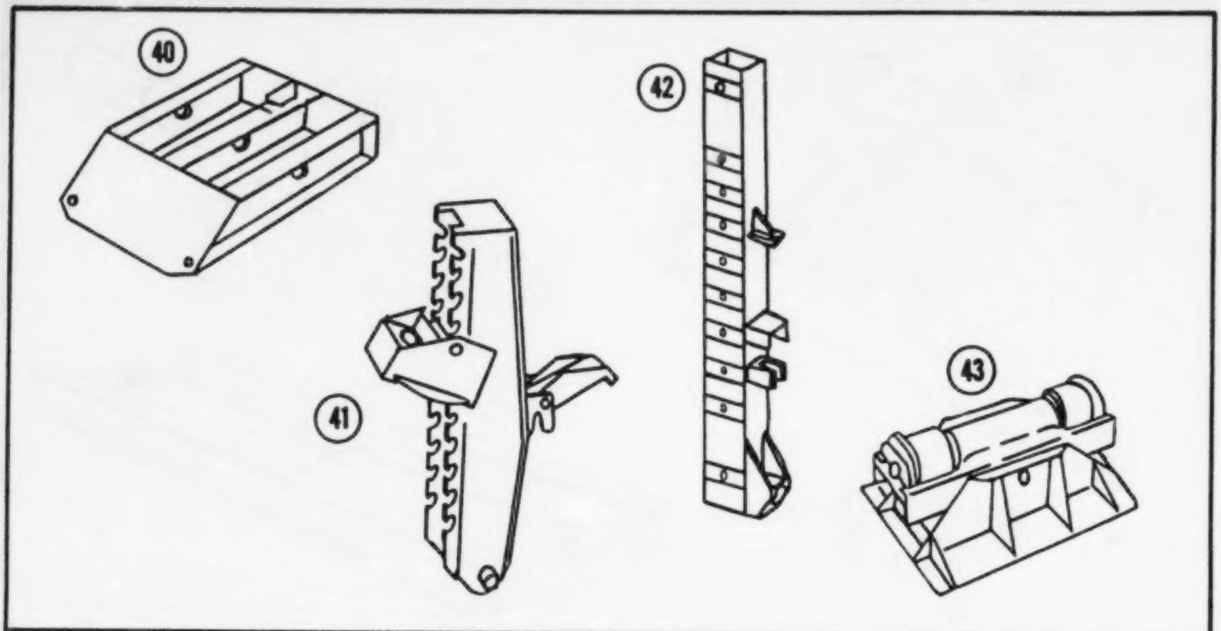
BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
36	5420-00-283-9053	Pin, Bracing: Steel alloy, cadmium plated, 7.25 in lg O/A, 1 in dia. (97403) 13220E0201		EA	8
37	5420-00-271-9308	Pin, Launching: Steel alloy, Cadmium plated, 17.12 in lg O/A, (97403) 13220E0203		EA	23
38	5420-00-271-9280	Pin Panel: Steel alloy, 28.25 in lg, (97403) 13220E0202		EA	20
39	5420-00-271-	Plate, Base, Double Story: Aluminum alloy, 64 in lg, 23 in w, 5.19 in h, (97403) 13220E0440		EA	6

Section II Components of End Item

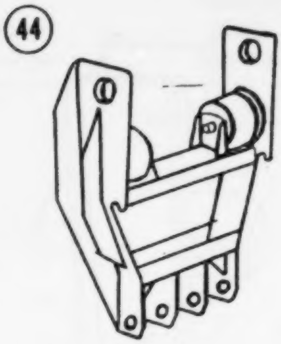
BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)

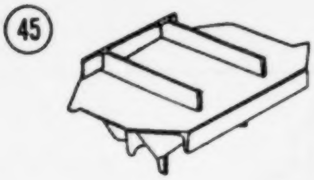


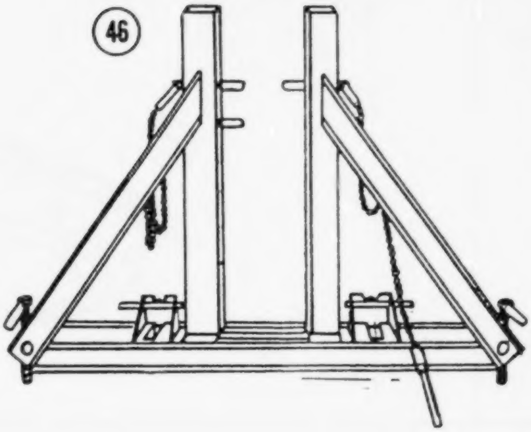
(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
40	5420-00-271-9306	Plate, Base, Single Story: Aluminum alloy, 24.38 in lg O/A, 17.25 in h, (97403) 13220E0340		EA	7
41	5420-00-271-9315	Post Assembly, Jacking: 34.75 in lg (97403) 13220E0470		EA	4
42	5420-00-271-9314	Post, Launching Nose, Girder: Aluminum alloy, 39.12 in lg, 4 in w, (97403) 13220E0380		EA	4
43	5420-00-271-9313	Roller Assembly, Landing: 22 in lg, 16 in w, 10.84 in h, (97403) 13220E0560		EA	4

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)



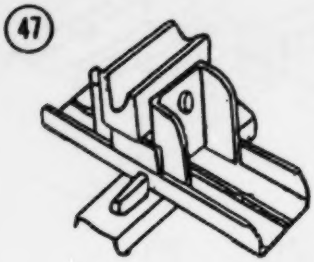


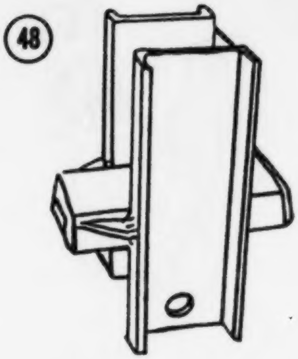


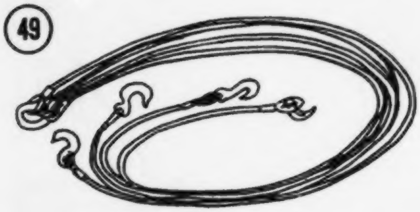
(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
44	5420-00-271-9312	Roller Assembly, Launching Nose: 33.88 in lg, 25 in w, 6.94 in h, (97403) 13220E0310		EA	2
45	5420-00-271-9311	Seat, Building Frame, Jack: Aluminum alloy, 12.25 in lg, (97403) 13220E0570		EA	5
46	5420-00-271-9318	Support Assembly, Adjustable, Roller Beam: 65.93 in lg, (97403) 13220E0350		EA	6

Section II Components of End Item

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB (Cont)







(1) Illus number	(2) National Stock Number	(3) Description FSCM and Part number	Usable On Code	(4) U/M	(5) Qty Rqr
47	5420-00-271-9317	Support Assembly, Fixed, Roller: 16.5 in lg, 12 in w, 10.5 in h, (97403) 13220E0520		EA	7
48	5420-00-271-9316	Support Jacking: Aluminum alloy, 15 in lg (97403) 13220E0410		EA	5
49	5420-00-296-9556	Sling: Steel, wire rope, 0.38 in dia, pear shape ring, 4 hooks, (97403) 13220E2852		EA	1

Section III. Basic Issue Items

BRIDGE ERECTION SET, FIXED BRIDGE, UK MGB

(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(3) Usable On Code	(4) U/M	(5) Qty Rqr
	5210-00-720-7982	Level, Mason's, 48 in.		EA	2
	5210-00-221-1862	Tape, Steel, 50 meter		EA	2

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

D-1. SCOPE

This appendix lists additional items you are authorized for the support of the Medium Girder Bridge.

D-2. GENERAL

This list identifies items that do not have to accompany the Medium Girder Bridge and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF COLUMNS

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the typed document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

b. Column (2) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

c. Column (3) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

d. Column (4) - Quantity authorized (QTY AUTH). Indicates the quantity of the item authorized to be used with/on the equipment.

SECTION II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER	(2) DESCRIPTION USABLE ON CODE	(3) U/M	(4) QTY AUTH
	MTOE AUTHORIZED ITEMS			
	CTA AUTHORIZED ITEMS			
3950-00 292-9882	HOIST, CHAIN: 5-ton, 6-ft lift handriven: integral hook suspension; 2 load chains, lever and ratchet: adjustable to 2-1/2 tons; 11-ft lift			

APPENDIX E
EXPENDABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

E-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the Medium Girder Bridge. These items are authorized to you by CTA, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. EXPLANATION OF COLUMNS

a. Column (1) - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material.

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Organizational Maintenance

c. Column (3) - National Stock Number. This is the National stock number assigned to the item; use it to reuqest or requisition the item.

d. Column (4) - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column (5) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. Expendable Supplies and Materials List

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
(1)	C	9150-00-190-0907	Grease, Automotive and Artillery (GAA), (81349), MIL-G-10924	LB
(2)	C	9150-00-263-3490	Oil, Lubricating, General Purpose, Low Temp., MIL-L-7870	QT
(3)	C	8030-00-850-7076	Coating Compound, Metal Pretreatment	GL
(4)	C	8010-00-298-2284	Primer Coating, Phenolic Resin	GL
(5)	C	8010-01-094-8425	Enamel, Alkyd, Camouflage, Forest Green	GL
(6)	C	8010-00-378-4339	Enamel, Lusterless, White	GL
(7)	C	5610-00-141-7838	Walkway Compound, Olive Drab	GL
(8)	C	6810-00-664-0387	Cleaning Solvent	GL
(9)	C	5110-00-558-0426	Lumber, Treated 3 in x 8 in x 14 ft (40 req'd), to be cut into lengths required for use as packing: 3 in x 8 in x 36 in (144 pcs) 3 in x 8 in x 84 in (4 pcs)	EA
(10)	C	4030-00-243-4441	Clamp, Wire rope: Steel, Galvanized U-bolt for ⅝ inch wire rope (minimum required-48)	EA
(11)	C	5120-00-224-2661	Grip, Cable Jaw: Parallel, Bronze Lined. Steel Jaws, Smooth Surfaces: 15,000 lb Safe Load: ½ to ¾ inch diameter wire rope (minimum required-8)	EA

Section II. Expendable Supplies and Materials List

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
(12)	C	5120-00-900-6096	Hammer, Blacksmith, 8 lb, double face, fiberglass handle (for anchorage use only-not to be used on bridge components) (minimum required-4)	LB
(13)	C	4010-00-274-6831	Rope, Wire, Improved Plow Steel, ⅝ in dia: 6 x 19, fiber core, 16.7 tons breaking strength, 300 ft nom O/A lg (minimum required-8)	EA
(14)	C	4030-00-270-8708	Thimble, Rope: Split Oval: Steel, Galvanized for ⅝ in dia wire rope (minimum required-16)	EA
(15)	C	5120-00-264-3796	Wrench, Open End, Adjustable: 12 inch, single head; 0 to 1.322 in jaw opening (minimum required-4)	EA
(16)	C	5420-00-371-9890	Assembly, Holdfast, Chain Type: Chain 6-feet lg, 6-inch links, C/W (minimum required-8) 9 ea Picket, Steel: 1-¼ in dia, 42 inches lg	EA
(17)	C	5110-00-551-9876	Lumber, Treated, 6 in x 6 in, 896BF (to be used for packing during Double Story Jacking Operations)	EA
(18)	C	5110-00-551-9877	Lumber, Treated, 8 in x 8 in, 504BF (to be use for packing during Double Story Jacking Operations)	EA

APPENDIX F

STEEL AND ALUMINUM GENERAL REPAIR

F-1. GENERAL.

This section illustrates and describes procedures for repair welding of defects in welded steel and aluminum joints, plates and damage holes in steel and aluminum plates. The welding procedures provided herein are to be used when making structural repairs to the medium girder bridge.

F-2. MATERIAL IDENTIFICATION.

Bridge components and launching parts are constructed from a medium strength aluminum alloy. The alloy consists of aluminum, zinc, and magnesium. It has no known commercial equivalent.

NOTE

Aluminum alloys containing zinc are difficult to weld. Repair by welding will be limited and is only permitted in areas where structural strength and dimensional tolerances will not be adversely affected. Components having fatique or corrosion cracks are not feasibly repairable.

F-3. PREPARATION FOR WELDING.

a. Cleaning.

(1) Aluminum. Thoroughly steam clean surface making sure that all foreign matter has been removed. Aluminum alloy must be physically and chemically clean before welding. Wirebrush the area where the weld is to be laid down, using rotary stainless steel wire brush or a handbrush. Clean brushed areas with dry cleaning solvent (SD). Welding should be done within four hours after cleaning to prevent build-up of aluminum oxide.

(2) Steel. Steel alloy must be clean before welding. Wirebrush or grind the area where weld is to be laid down, using a rotary stainless steel wire brush or a handbrush.

F-3. PREPARATION FOR WELDING (Cont).

b. Visual inspection. A thorough visual inspection will be performed to determine the extent of damage. Use a magnifying glass during this inspection. Generally, the full extent of the damage can be determined by this means.

F-4. WELDING PRECAUTIONS.

a. The welding areas should be properly ventilated without excessive drafts affecting the welding arc and inert shielding gas.

b. Do not look directly at the arc unless protected by a welding helmet or a hand shield. Use the correct shade of lens, usually Number 10 for TIG welding and Number 12 or Number 14 for MIG welding.

c. Adequate body protection should be worn leaving no part of the body exposed.

d. The floor where welding is done should be dry.

e. Handle welding gun where electrode will not become grounded.

f. Do not change a tungsten electrode before it has cooled or while the transformer switch is in the ON position. Do not change spools of filler wire while the generator or rectifier is ON.

g. Do not weld in the vicinity of flammable or combustible materials.

h. When welding aluminum, mark the metal HOT. Aluminum does not change color when heated.

WARNING

Wear protective eye goggles when chipping or grinding.

i. Do not chip or grind unless wearing safety glasses.

F-5. WELDING PROCESSES.

a. MIG (Metal-Inert Gas) process. The MIG process is recommended when welding aluminum or steel plate of greater than 1/8-inch thickness. Aluminum repairs will be made with type 5356 aluminum filler wire and steel repairs with E 70 S-3 or 120 S-1 steel filler wire. Refer to Figure F-1 for welding procedures and requirements.

F-5. WELDING PROCESSES (Cont).

b. TIG (Tungsten-Inert Gas) process. When welding steel or aluminum plate 1/8-inch thick or under, the TIG process is recommended. Aluminum repairs will be made with type 5356 aluminum filler wire and steel with E 70 S-3 steel filler wire. Refer to Figure F-2 for welding procedures and requirements.

F-6. WELDER QUALIFICATION.

a. Welding shall be accomplished only by a qualified skilled welder.

b. Where possible, before attempting to repair weld of any section, the welder shall practice on similar thickness weld joints as the section being prepared.

c. Due to the difficulty to weld, all horizontal position-type welding is recommended.

F-7. WELDING TECHNIQUE.

a. Length of the arc is quite critical. Lack of fusion and penetration is typical of employing a spray-type or long-arc type action. The conventional short-arc length shall be used and can be judged by sound. The short-arc is characterized by a short, popping sound. The long-arc produces a hissing sound.

b. The sizes of welds shall not be less than the thickness of the thinner of any two pieces being joined. Particular care shall be taken to ensure that all welds are up to the required size. Repair welds shall be the same design, type, and size, as used in the existing component. All repair welds shall be full-penetration welds.

c. Precautions shall be taken to use small multi-pass weld beads to ensure complete penetration. Scratch brush with a stainless steel brush between pass welds to ensure maximum quality.

CAUTION

> It is essential that the parent metal adjacent to the weld does not become overheated during welding. Overheating will overage the parent metal. The temperature of the work shall not exceed 200 degrees C at a distance of 1 inch from the weld. This shall be checked by the use of temperature-sensitive instrument, sticks or paint.

F-7. WELDING TECHNIQUE (Cont).

NOTE

Welding shall be accomplished in a sheltered area. Precautions shall be taken to eliminate any draft passing over the welded area.

d. Inspection. All welds shall be closely inspected after cooling and any shrinkage or star cracks shall be chipped out and rewelded.

F-8. POST WELD TREATMENT OF COMPONENTS AND AGE HARDENING.

WARNING

The heat generated by the welding process will cause a change in the physical properties of the alloy and will result in progressive loss of strength up to 70 percent. The components must not be used until proper treatment and natural age hardening has been accomplished.

a. The following specified protective coatings must be applied to the weld area with a minimum delay:

(1) Zinc spray the area that was ground clean of zinc coating to a depth of 0.005 to 0.010 inch.

(2) Apply one coat of paint priming, zinc chrome. Air drying time is 16 hours.

(3) Apply one coat of paint undercoat. Air drying time is 16 hours.

(4) Apply one coat of paint finishing, bronze green. Air drying time is 16 hours.

b. Store the repaired component undercover for a minimum of 1 month before putting it into use.

NOTE

Artificial age hardening of the components is not permitted. Only natural aging will return the components to 95% of the original strength.

F-9. REPAIR WELDING OF JOINTS.

a. After determining the area to be repaired, remove the defect beyond the root either by chipping, grinding, routing or other mechanical means. The angle of the prepared repair area should be 60 degrees minimum and the radius of the root of the joint should not be less than 1/8 inch.

b. Wirebrush the prepared area using a rotary stainless steel wheel or a hand stainless steel brush. For aluminum welds, clean every layer of weld before subsequent welds are deposited.

c. Reweld the joint according to procedures shown in Figures F-1 and F-2. Precautions should be taken to restrict any excessive drafts of air toward the welding which will result in inadequate gas shielding.

CAUTION

In cold temperatures, preheat joint to 150°F (66°C) maximum. Do not overheat or ballistic characteristics may be destroyed.

F-10. REPAIR WELDING OF ALUMINUM OR STEEL PLATE.

a. Defects such as cracks, grooves, gouges, etc., will be repaired using the same procedure as is used to repair welded joints.

b. When it is necessary to remove a portion of the plate due to a damaged area, cut out plate in a rectangular shape where possible.

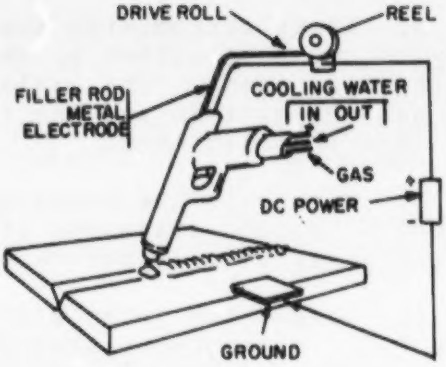
c. Small areas that are damaged will be prepared and welded by use of threaded plugs as shown in Figure F-3.

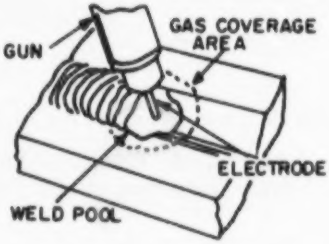
MIG (Metal-Inert Gas) Process

1. The MIG (Metal-Inert Gas) process utilizes a DC power source control panel, and welding gun that feeds a consumable electrode at predetermined speed into a molten pool under a protective shield of argon gas (For steel, ARGON + 2% OXYGEN GAS).

2. A welding pool forms immediately when the arc is established, and welding progresses by moving the welding gun along the joint line at a rate that builds up a bead of desired dimensions.

3. A shield of inert gas protects the electrode and weld pool from oxidation during welding. No flux is required.





FILLET SIZE	WIRE DIA	AMPS.	VOLTS	POL.	CURRENT	ARGON FLOW C.F.H.
1/8	3/64	140 175	21-24	REV.	D.C.	50
3/16	1/16	190 250	24-28	REV.	D.C.	50
1/4	1/16	190 250	24-28	REV.	D.C.	50
5/16	1/16	190 250	24-28	REV.	D.C.	50
3/8	3/32	350 390	28-31	REV.	D.C.	50

FIGURE F-1. MIG (Metal-Inert Gas) Process Type Welding.

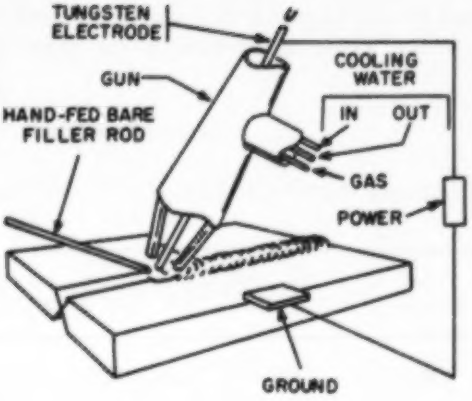
TIG (Tungsten-Inert-Gas) process

1. The TIG (Tungsten-Inert-Gas) process utilizes a power source control panel, and welding gun that holds a non-consumable tungsten electrode.

2. A welding pool forms immediately when the arc is established, and welding progresses by manually feeding a bare filler rod to the molten pool and moving the welding gun and filler rod along the joint line at a rate that builds up a bead of desired dimensions.

3. A shield of inert gas - either argon or helium, or a mixture of both - surrounds the electrode and the weld pool to prevent oxidation during welding.

4. The TIG process should normally be used only when welding together sections of 1/8 inch thickness or less.

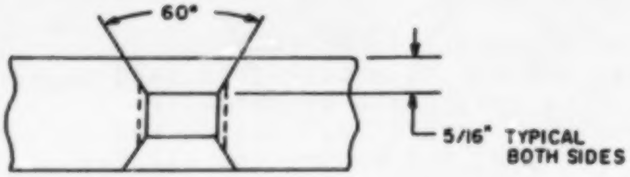


WELDING DATA FOR TIG WELDING METHOD

THICKNESS IN.	TYPE OF WELD	WELDING CURRENT			WELDING ROD		TUNGSTEN ELECTRODE	ARGON FLOW C.F.H.
		STEEL	ALUMINUM	AMPERAGE	MATERIAL	SIZE IN.	SIZE IN.	
1/16	A-BUTT	DC STRAIGHT POLARITY	ALTERNATING CURRENT HIGH FREQUENCY STABILIZED	60-80	STEEL	1/16	1/16	15
	B-LAP			70-90	ALUM.	1/16	1/16	15
	C-TEE			70-90		1/16	1/16	15
1/8	D-BUTT			125-145	STEEL	3/32	3/32	17
	E-LAP			140-160	ALUM.	3/32	3/32	17
	F-TEE			140-160		3/32	3/32	17
3/16	G-BUTT			190-220	STEEL	3/32	3/32	21
	H-LAP			210-240	ALUM.	3/32	3/32	21
	J-TEE			210-240		3/32	3/32	21
1/4	K-BUTT			260-300	STEEL	1/8	1/8	21
	L-LAP			260-300	ALUM.	1/8	1/8	21
	M-TEE			260-300		1/8	1/8	21

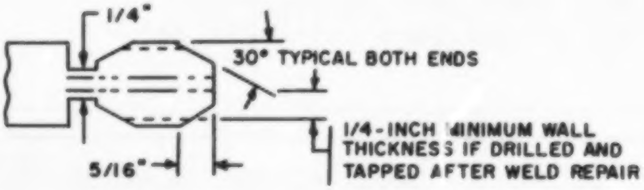
FIGURE F-2. TIG (Tungsten-Inert Gas) Process Type Welding.

NOTE. DRILL NEW HOLE AT LEAST 1/2 INCH IN DIAMETER LARGER THAN HOLE TO BE REPAIRED.



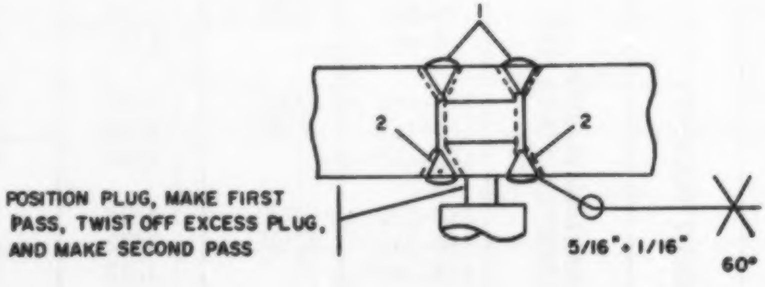
A. PREPARE THREADED HOLES THAT ARE DAMAGED OR OVERSIZE.

NOTE. COURSE THREADED PLUG TO MATCH DRILLED AND TAPPED HOLE ABOVE.


1/4"
30° TYPICAL BOTH ENDS
1/4-INCH MINIMUM WALL THICKNESS IF DRILLED AND TAPPED AFTER WELD REPAIR
5/16"

B. PREPARE THREADED PLUG TO MATCH THREAD OF HOLE BEING REPAIRED.

NOTE. NUMBERS DENOTE WELDING PASSES.


1
2
2
POSITION PLUG, MAKE FIRST PASS, TWIST OFF EXCESS PLUG, AND MAKE SECOND PASS
5/16" + 1/16"
60°

C. TYPICAL TWO-PASS WELD SEQUENCE USING 1/16- INCH ELECTRODE.

FIGURE F-3. Repair Welding Using Threaded Plug.

F-11. REPAIR WELDING CRACKS.

a. Refer to Figure F-4 and drill stop-holes at both ends of crack.

b. Grind or chip cavities for welding as shown in Figure F-5. Chisels used for chipping should have a sharp edge. Round gouges that make a good groove for welding are a quick way to prepare a weld joint. Thoroughly wirebrush cavity.

c. Weld the crack, making sure of good penetration.

d. If cracks are large or numerous in area, cut out damage section and weld in a new section (Figure F-5).

e. Do not simply putty over the surface. Weld joints should be 100%. Back-chip and weld from both sides whenever possible to ensure fusion through full depth of material.

F-12. REPAIR OF THIN PLATES AND SHEETS.

a. Cuts and tears in thin plates and sheets can be closed by welding using the TIG method (Figure F-2).

b. Punctured holes through plates and sheets, particularly those with multiple tears, jagged edges, and dented or distorted areas, should be reworked by cutting out damaged areas. After mutilated portion has been removed, adjacent metal must be restored to its original flatness or contour.

c. Reshaping of thin aluminum parts may be accomplished by means of rubber or wood mallets. Steel hammers and hydraulic jacks should be used with wood blocks. Avoid local thinning from heavy steel mauls or hammers. Reshaping of thin steel parts may be accomplished by means of steel hammers or hydraulic jacks.

d. Should material build-up be too great and create buckling, a pie or wedge-shaped piece of material should be removed. Flattening can then be accomplished. This operation is required to ensure proper fit of mating parts or assemblies. As a general pattern, cutout areas should be rectangular. These shapes are suited to welding with either flush or overlapping patches.

e. On thin sheets, smaller diameter wire and lower amperage should be used to avoid burning through the sheet. Alternate weld passes from side to side.

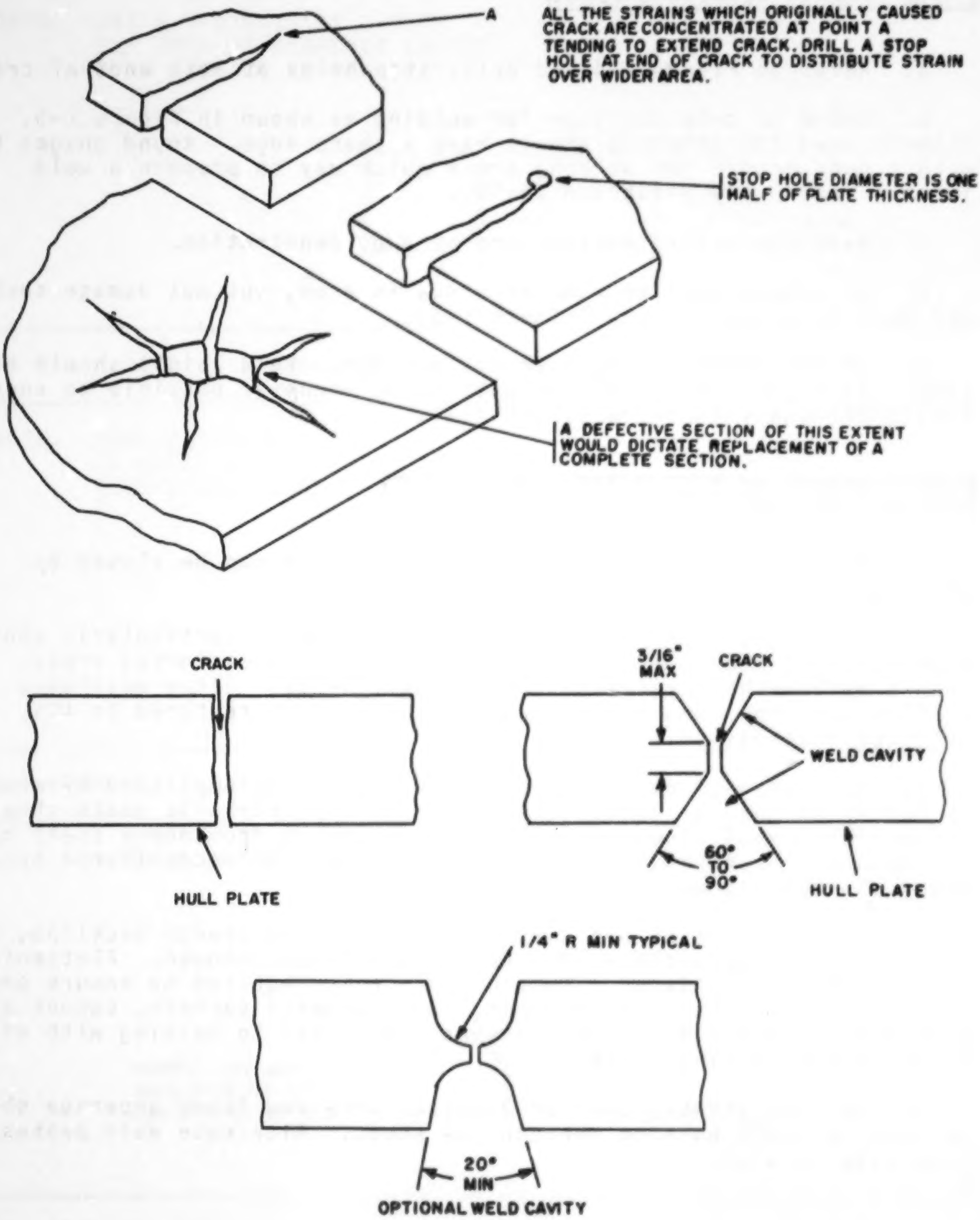
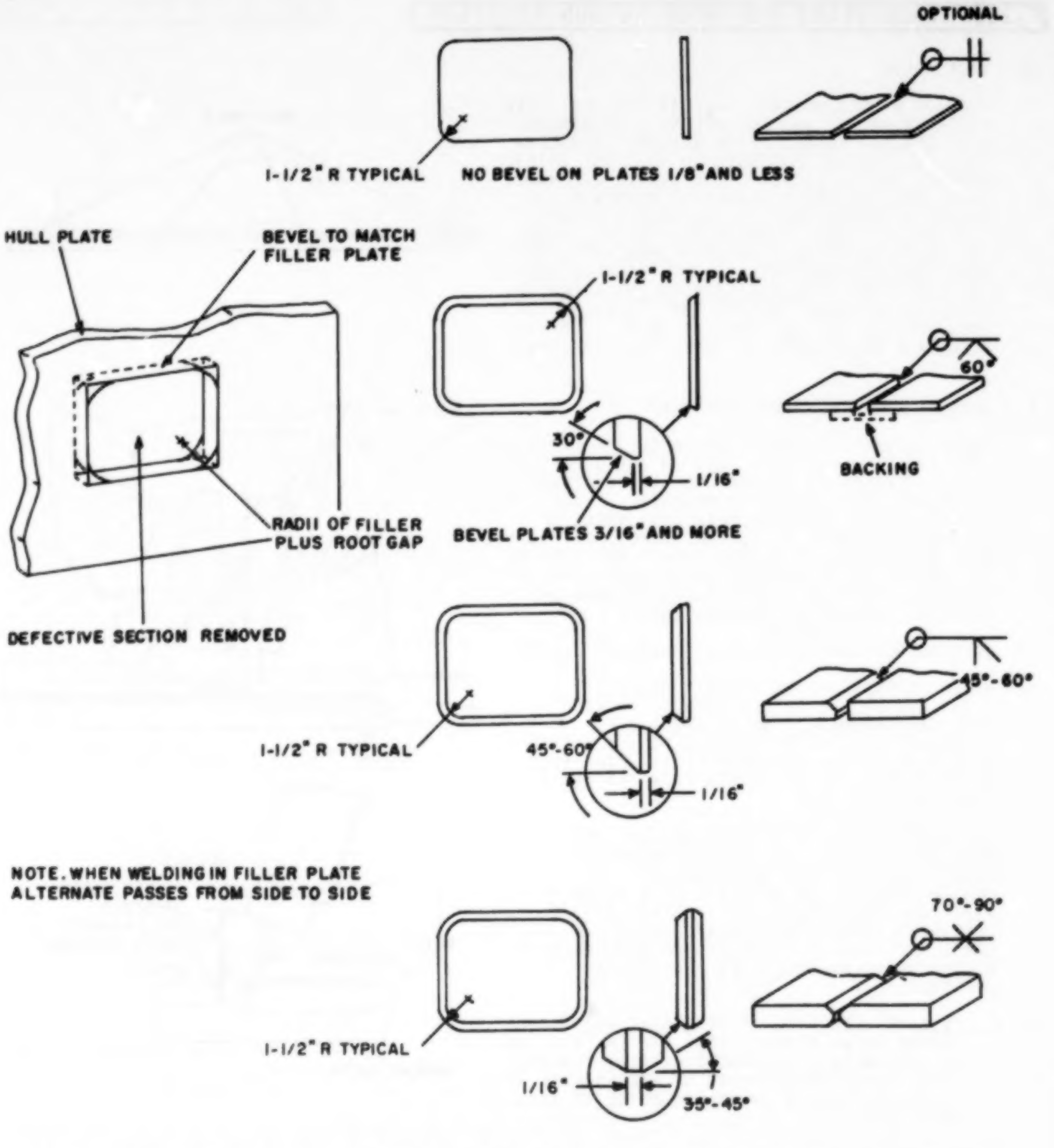

A
ALL THE STRAINS WHICH ORIGINALLY CAUSED CRACK ARE CONCENTRATED AT POINT A TENDING TO EXTEND CRACK. DRILL A STOP HOLE AT END OF CRACK TO DISTRIBUTE STRAIN OVER WIDER AREA.
STOP HOLE DIAMETER IS ONE HALF OF PLATE THICKNESS.
A DEFECTIVE SECTION OF THIS EXTENT WOULD DICTATE REPLACEMENT OF A COMPLETE SECTION.
CRACK
HULL PLATE
3/16" MAX
CRACK
WELD CAVITY
60° TO 90°
HULL PLATE
1/4" R MIN TYPICAL
20° MIN
OPTIONAL WELD CAVITY

FIGURE F-4. Typical Weld Cavity and Stop-Hole Drilling.


OPTIONAL
1-1/2" R TYPICAL
NO BEVEL ON PLATES 1/8" AND LESS
HULL PLATE
BEVEL TO MATCH FILLER PLATE
1-1/2" R TYPICAL
60°
BACKING
30°
1/16"
RADII OF FILLER PLUS ROOT GAP
BEVEL PLATES 3/16" AND MORE
DEFECTIVE SECTION REMOVED
1-1/2" R TYPICAL
45°-60°
45°-60°
1/16"
NOTE. WHEN WELDING IN FILLER PLATE ALTERNATE PASSES FROM SIDE TO SIDE
70°-90°
1-1/2" R TYPICAL
1/16"
35°-45°

* USE STAINLESS STEEL BACKUP BARS WITH A PROPERLY MACHINED GROOVE AND CONTOURED TO FIT THE SURFACE FOR ONE SIDE WELDING OR WHERE ACCESSIBILITY HINDERS TWO SIDE WELDING. ONE INCH WIDE PERMANENT BACKUP STRIPS OF THE SAME MATERIAL AND THICKNESS AS THE PLATES BEING WELDED MAY BE USED IF THEY DO NOT HINDER COMPONENT USE.

FIGURE F-5. Filler Plate Details.

F-13. TACK WELDS AND WELDING GUN POSITION.

A. TACK WELDS

GOOD JOINT FIT UP MAKES WELDING EASIER, SAVES FILLER WIRE AND GAS AND HELPS IN OBTAINING HIGH QUALITY WELDS. TACK WELDING IS NECESSARY IF JIGS ARE NOT USED TO HOLD THE JOINT MEMBERS IN POSITION. THESE SHOULD BE SMALL, NEAT, AND CORRECTLY PLACED TO MAINTAIN PROPER ALIGNMENT BEFORE AND DURING WELDING. TACK WELDS SHOULD BE APPROXIMATELY 2 INCHES IN LENGTH AND SHOULD BE SO SPACED AS TO PROVIDE ADEQUATE SUPPORT FOR THE INTENDED JOINT. THEY MAY HAVE A CROSS SECTIONAL AREA EQUIVALENT TO THE FIRST PASS AND MAY BE WELDED OVER AND INCLUDED IN THE FIRST WELDMENT. DEFECTIVE TACK WELDS MUST BE COMPLETELY REMOVED.

B. WELDING GUN LEAD ANGLE AND CANT

POSITION THE GUN FOR A LEAD ANGLE OF 10 TO 15° OFF VERTICAL, AND POINT GUN IN THE DIRECTION OF WELD TRAVEL TO ENSURE GOOD GAS COVERAGE, CLEANING, AND PREHEAT OF MATERIAL. POSITION THE GUN FOR A PERPENDICULAR CANT ANGLE OF 90° TO THE PARENT METAL TO ENSURE THAT FILLER WIRE AND ARC ARE DIRECTED TOWARD THE APEX OF THE GROOVE FOR EQUAL FUSION ON BOTH SIDES OF MATERIAL, EVEN WELD BEAD BUILDUP, GOOD GAS COVERAGE, AND EQUAL PENETRATION.

C. WELDING GUN NOZZLE CLEARANCE AND ARC LENGTH

1. NOZZLE CLEARANCE, MAINTAIN A NOZZLE CLEARANCE OF 1/2 TO 5/8 INCH TO PROVIDE GOOD GAS COVERAGE. IMPROPER NOZZLE CLEARANCE WILL CAUSE OXIDE DEPOSITS WITHIN WELD BEAD, FORCE GAS BUBBLES INTO THE WELD, OR PREVENT CLEANING ACTION ON MATERIAL IN FRONT OF WELD POOL.

2. ARC LENGTH, MAINTAIN THE LENGTH OF THE ARC FROM 1/8 TO 3/16 INCH TO OBTAIN A SMOOTH HISSING OR BUZZING SOUND. INCREASE AMPERAGE OR DECREASE FEED SPEED OF WIRE TO OBTAIN PROPER ARC. STARTING THE WELD WITH TOO LOW AN AMPERAGE WILL CAUSE THE WIRE TO STICK TO THE WORKPIECE A POPPING SOUND INDICATES TOO HIGH AN AMPERAGE.

NOTE. OBSERVE WELD POOL TO DETERMINE WIDTH AND HEIGHT OF WELD BEAD, EDGE TIE-IN (MEETING OF WELD BEAD WITH PARENT METAL), PENETRATION (DEPTH OF BLENDING OF FILLER WIRE WITH OF FILLER WIRE WITH PARENT METAL AT APEX OF GROOVE).

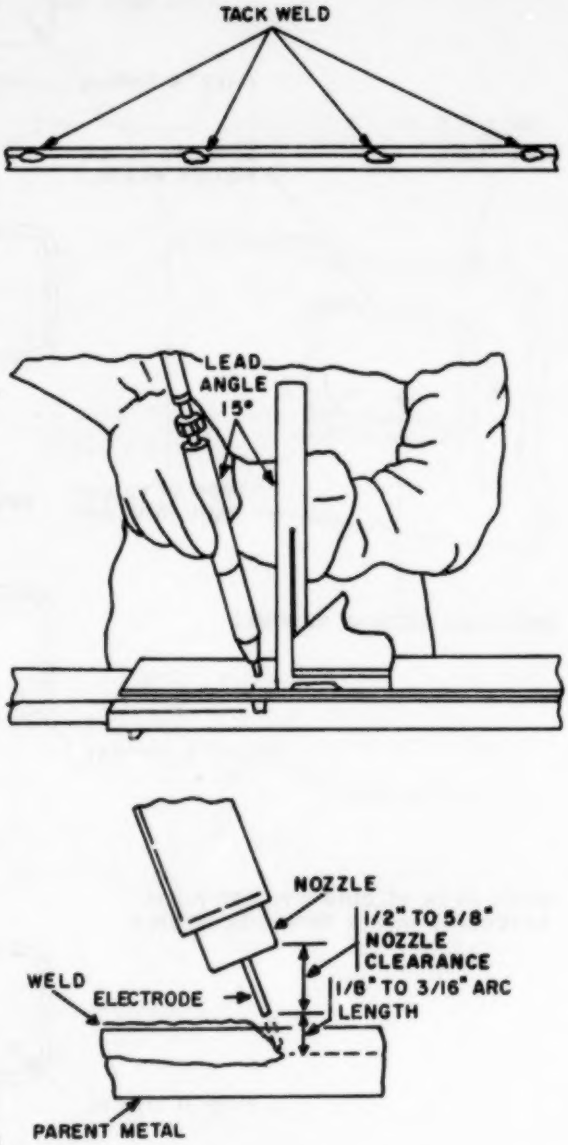
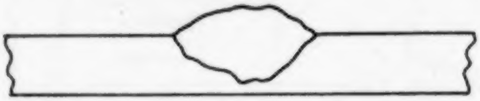
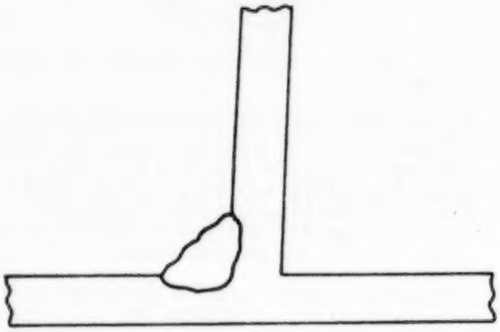


FIGURE F-6. Tack Welds and Welding Gun Position.

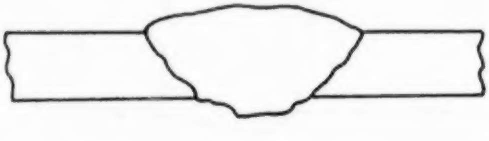
F-14. TYPES OF WELDS.



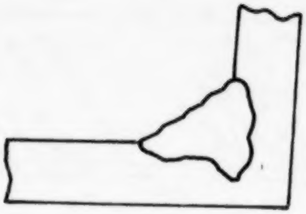
A. BEAD IN PLATE.



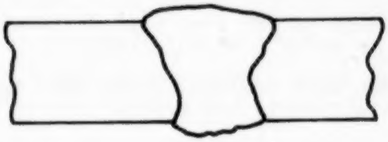
B. SINGLE PASS FILLET WELD.



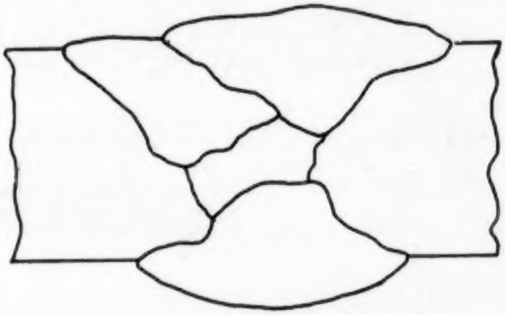
C. SINGLE PASS BUTT WELD.



D. MULTIPASS FILLET WELD.



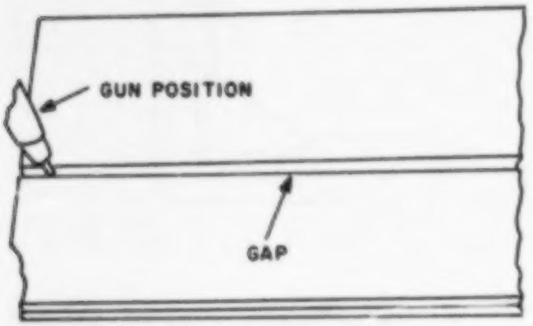
E. MULTIPASS BUTT WELD.

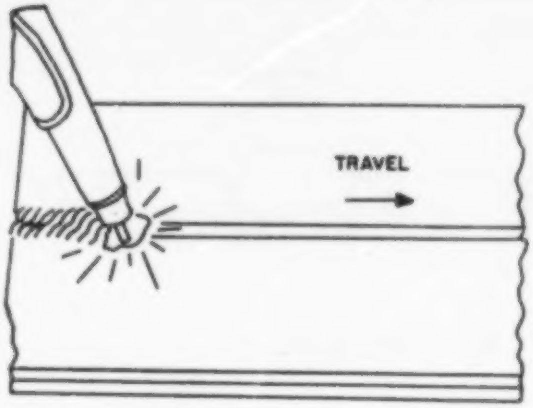


F. MULTIPASS BUTT WELD.

FIGURE F-7. Types of Welds.

F-15. APPLICATION OF FILLET WELDS.





FLAT POSITION SINGLE-PASS BUTTWELD

A. SET UP ABUTTING ALUMINUM OR STEEL SECTIONS WITH A SLIGHT GAP BETWEEN SECTIONS TO PERMIT GOOD ROOT FUSION. GAP SHOULD BE THE SAME SIZE AS FILLER WIRE WHEN USING A BACKUP PLATE.

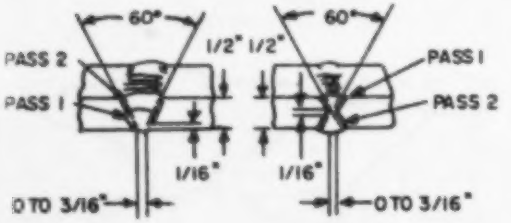
B. TACK WELD SECTIONS AFTER THEY HAVE BEEN ALIGNED AND RIGIDLY SUPPORTED.

C. START WELD PASS BY BRINGING GUN INTO FOREHAND WELDING POSITION. HOLD GUN AT 10 TO 15° FROM VERTICAL, POINTED IN DIRECTION OF TRAVEL.

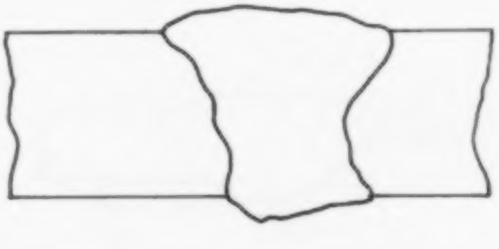
D. START ARC AND MOVE GUN FORWARD AT PROPER SPEED.

E. ADJUST GUN ANGLE TO GIVE PROPER CLEANING ACTION, DEPTH OF PENETRATION, AND BEAD CONTOUR, ANGLE OF GUN DEPENDS UPON SPEED OF TRAVEL AND POSITION OF JOINT. WHEN BUTT WELDING UNEQUAL SECTIONS DIRECT ARC AGAINST HEAVIER PIECE TO OBTAIN EQUAL FUSION IN THE TWO EDGES.

F. OBSERVE ARC LENGTH TO PREVENT POROSITY OR LACK OF FUSION. A PROPER ARC IS FROM 1/18 TO 3/16 INCH LONG, DEPENDING ON THE CURRENT JOINT, AND TYPE OF FILLER WIRE.



FOLLOWING PASS 1, TURN PLATE OVER AND DO PASS 2. BACKUP IF NECESSARY

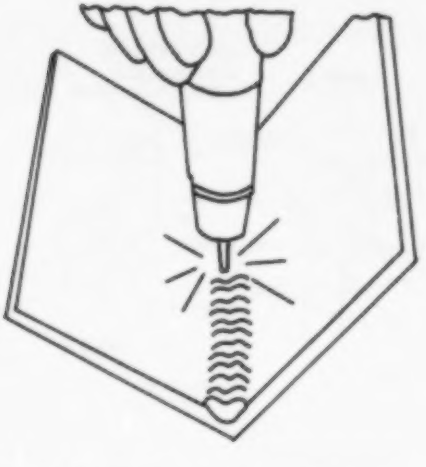


FLAT POSITION MULTIPASS BUTT WELD

1. FOLLOW SAME PROCEDURE AS DESCRIBED ABOVE IN SINGLE-PASS BUTT WELD TO APPLY FIRST PASS.
2. ON SUBSEQUENT PASSES USE LONGER ARC TO APPLY WIDE BEAD WITH LESS PENETRATION.
3. MAINTAIN SAME GUN ANGLE AS FOR SINGLE-PASS BUTT WELD.
4. WIREBRUSH MATERIAL BETWEEN PASSES. LOWER WELDING CURRENT SLIGHTLY FOR EACH PASS TO COMPENSATE FOR HEAT BUILD UP IN METAL AS WORK PROGRESSES.

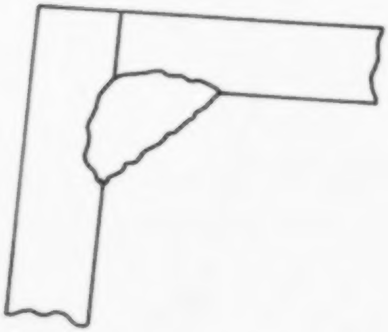
FIGURE F-8. Application of Fillet Welds (Single Pass and Multipass).

F-16. APPLICATION OF BUTT WELDS.

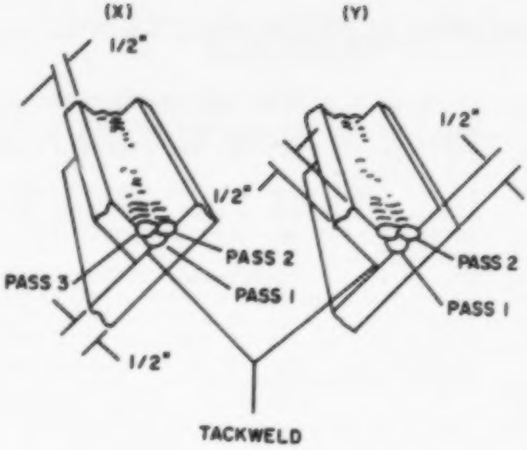


A. FLAT POSITION SINGLE-PASS FILLET WELD

MAKE A SINGLE-PASS FILLET WELD IN THE FLAT POSITION AS SHOWN. NOTE POSITION OF GUN TO ENSURE GOOD WELD.



B. CROSS SECTIONAL VIEW OF A GOOD SINGLE-PASS FILLET WELD.



C. FLAT POSITION MULTIPASS FILLET WELD

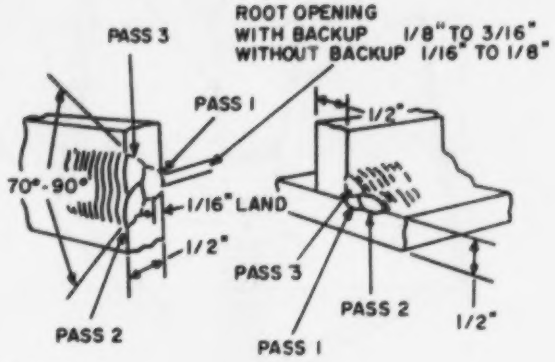
1. ONE METHOD OF MULTIPASS FILLET WELDING IS THE STRINGER BEAD OR STRAIGHT-PASS TECHNIQUE SHOWN IN X. ANOTHER METHOD IS THE SLIGHT OSCILLATING TECHNIQUE SHOWN IN Y.
2. IT IS IMPORTANT THAT THE EDGES OF THE WELD POOL FUSE PROPERLY. OBSERVE THE WELD POOL EDGES RATHER THAN THE ARC. ANY OSCILLATING OR WEAVING MOTION SHOULD BE SLIGHT, SMOOTH, AND SLOW. WIDE WEAVING OR FAST WHIPPING OF THE ARC WILL EXPOSE PART OF THE MOLTEN METAL TO AIR, RESULTING IN A POOR WELD.
3. USE A SHORT ARC DURING FIRST PASS TO ENSURE ROOT PENETRATION. USE A LONGER ARC ON SUBSEQUENT PASSES WHERE A WIDE BEAD WITH LESS PENETRATION IS DESIRED.
4. MAINTAIN SAME GUN ANGLE AS FOR A SINGLE-PASS FILLET WELD.
5. WIREBRUSH THE MATERIAL BETWEEN PASSES. LOWER WELDING CURRENT SLIGHTLY FOR EACH PASS TO COMPENSATE FOR HEAT BUILDUP IN THE METAL AS WORK PROGRESSES.

FIGURE F-9. Application of Butt Welds

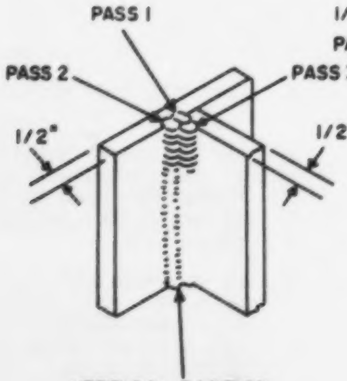
F-17. APPLICATION OF HORIZONTAL AND VERTICAL MULTIPASS FILLET AND BUTT WELDS.

HORIZONTAL OR VERTICAL MULTIPASS FILLET AND BUTT WELDS.

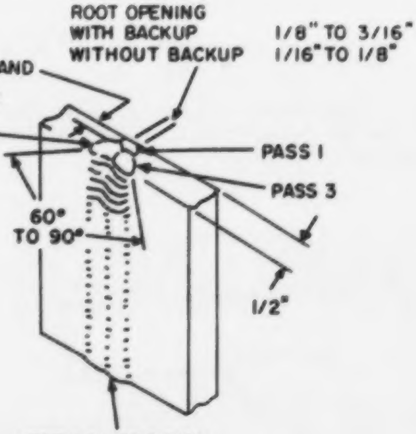
1. ALL RULES FOR FLAT POSITION WELDING MUST BE FOLLOWED FOR OUT-OF-POSITION MIG WELDING.
2. MAKE CERTAIN SECTIONS ARE PROPERLY FITTED AND JIGGED.
3. DO NOT USE A HIGH WELDING CURRENT NOR DEPOSIT TOO LARGE A WELD, USE SMALLER DIAMETER FILLER WIRE THAN THAT USED WHEN WELDING FLAT POSITION.
4. FOLLOW WELD PASS SEQUENCE AS INDICATED.
5. IF MOLTEN POOL IS TOO LARGE, THE EFFECT OF GRAVITY WILL MAKE IT DIFFICULT TO CONTROL BEAD SIZE, WELD SIZE AND BEAD SEQUENCE MUST BE SUCH THAT THERE IS NO LACK OF FUSION BETWEEN PASSES.



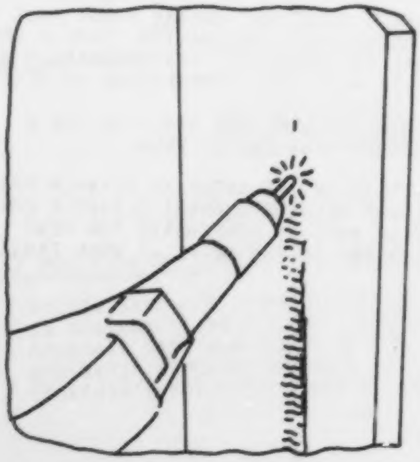
HORIZONTAL POSITION MULTIPASS FILLET AND BUTT WELDS



VERTICAL POSITION MULTIPASS FILLET WELD



VERTICAL POSITION MULTIPASS BUTT WELD



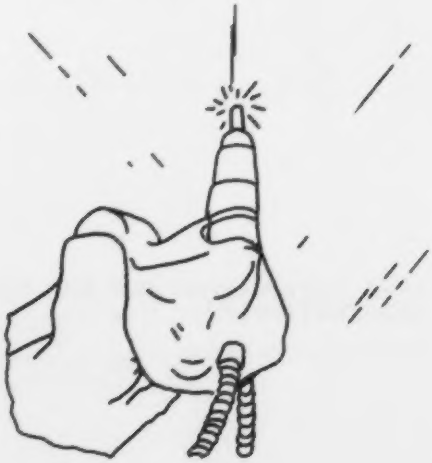


FIGURE F-10. Application of Horizontal and Vertical Multipass Fillet and Butt Welds.

F-18. APPLICATION OF OVERHEAD MULTIPASS WELDS.

OVERHEAD POSITION MULTIPASS FILLET AND BUTT WELDS

1. USE SAME METHODS AND PRECAUTIONS DESCRIBED IN HORIZONTAL AND VERTICAL WELDING.
2. HIGHER RATE OF FLOW OF SHIELDING GAS WILL BE REQUIRED SINCE WELDING GUN IS OPERATED IN AN INVERTED POSITION.
3. KEEP MOLTEN POOL SMALL TO MAINTAIN CONTROL OF BEAD.

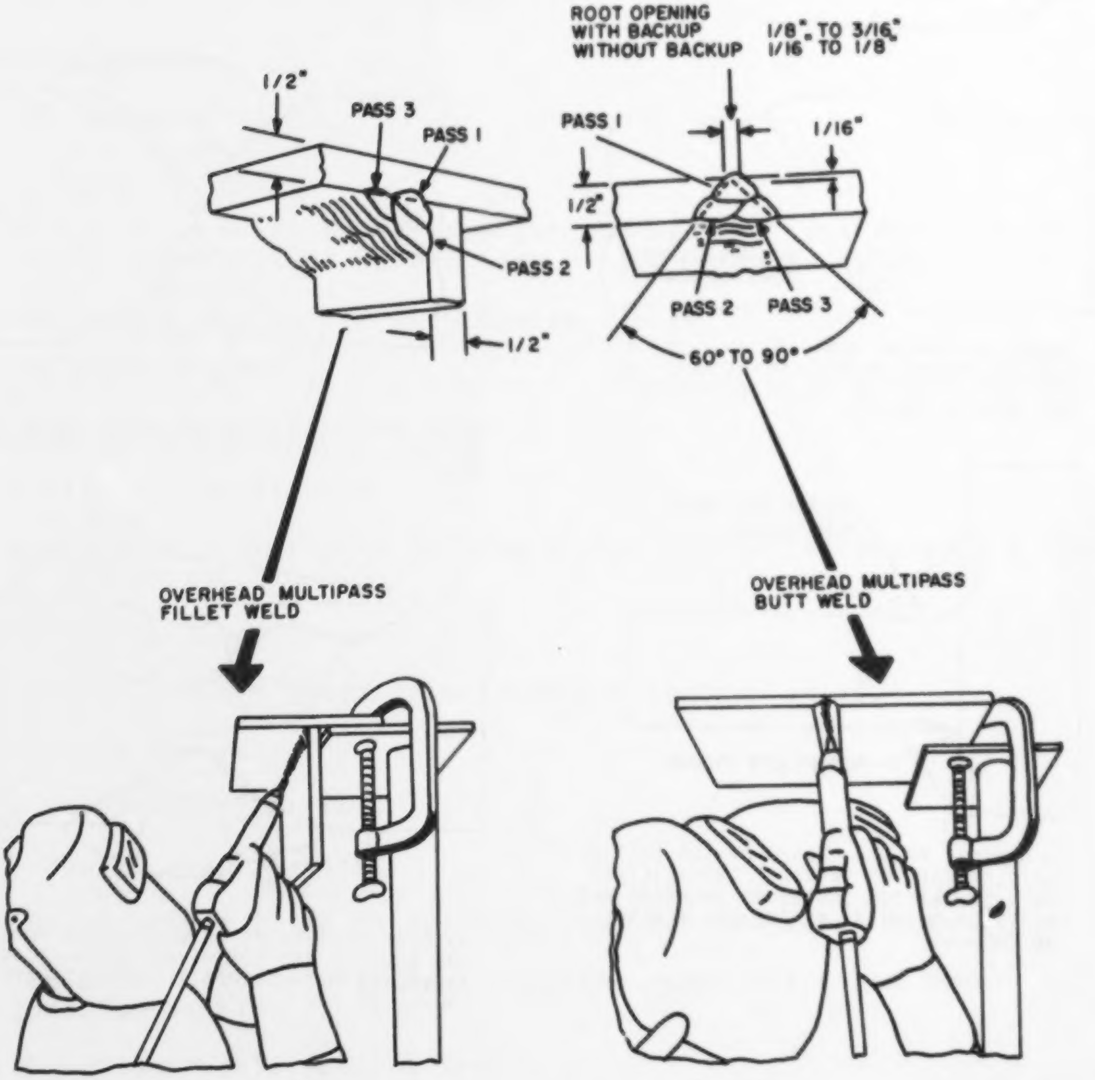
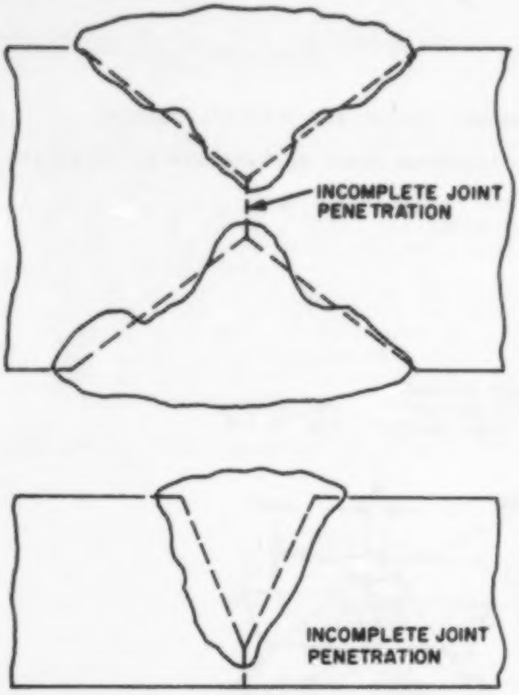
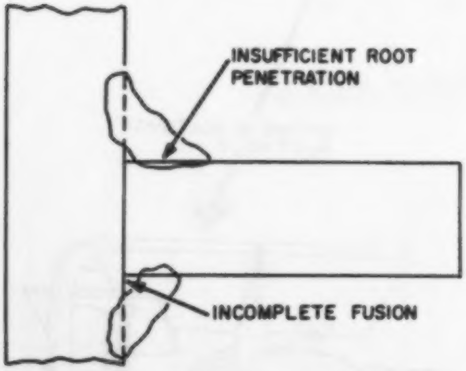

ROOT OPENING
WITH BACKUP 1/8" TO 3/16"
WITHOUT BACKUP 1/16" TO 1/8"
1/2"
PASS 3
PASS 1
PASS 2
1/2"
PASS 1
1/16"
1/2"
PASS 2
PASS 3
60° TO 90°
OVERHEAD MULTIPASS FILLET WELD
OVERHEAD MULTIPASS BUTT WELD

FIGURE F-11. Application of Overhead Multipass Fillet and Butt Welds.

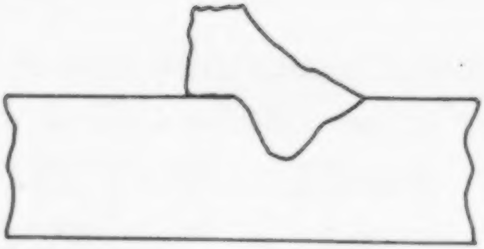
F-19. COMMON FAULTS IN WELDING.



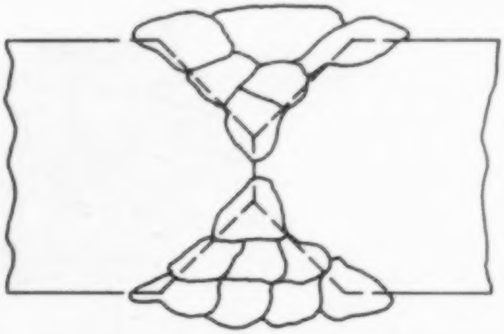
A. INCOMPLETE JOINT PENETRATION (POOR ROOT FUSION) CAUSED BY NOT ENOUGH HEAT AND TOO FAST A RATE OF TRAVEL ADJUST HEAT AND RATE OF TRAVEL



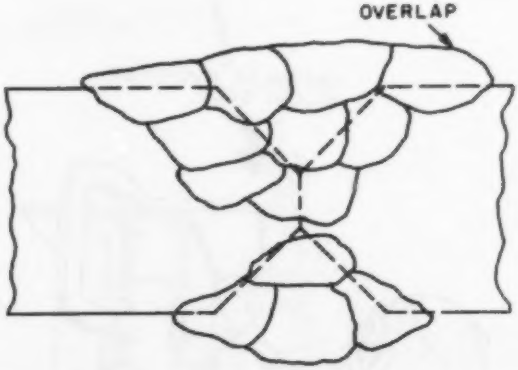
B. INCOMPLETE FUSION CAUSED BY TOO FAST OR TOO SLOW RATE OF TRAVEL. INSUFFICIENT ROOT PENETRATION CAUSED BY IMPROPER ARC DIRECTION OR BY USING TOO LOW A WELDING CURRENT.



C. UNDERCUT GROOVE MELTED INTO THE BASE METAL ADJACENT TO THE TOES OF THE WELD AND LEFT UNFILLED BY WELD METAL - CAUSED BY EXCESSIVE HEAT AND RATE OF TRAVEL. THIS PROVIDES A SHEARING POINT WEAKNESS. ADJUST HEAT OR REDUCE RATE OF TRAVEL



D. GROSS POROSITY CAUSED BY INSUFFICIENT SHIELDING GAS, IMPROPER CLEANING, OR DIRTY FILLER WIRE



E. OVERLAP PROTRUSION OF WELD METAL BEYOND THE BOND AT THE TOE OF THE WELD - CAUSED BY EXCESSIVE METAL DEPOSIT. ADJUST RATE OF TRAVEL OR ARC LENGTH.

FIGURE F-12. Common Faults in Welding.

LIST OF ABBREVIATIONS

A - Far bank junction panel.

AA - Anchor assembly.

AA(L) - Anchor assembly (long link).

AA(S) - Anchor assembly (short link).

AR - Angle of repose (far bank edge of gap).

AR' - Angle of repose (near bank edge of gap).

B - Top panel next to far bank junction panel.

BP - Bottom panel

BP - Building pedestal.

BSB - Bankseat beam.

C - Distance of water below line joining banks at a distance W from roller beam closest to the edge of gap (used in design only).

C - Top panel next to far bank bankseat beam.

CG - Center of gravity.

CM or cm - Centimeters

CRB - Capsill roller beam.

D - Deflection of ETP line joining banks at critical distance W (used in design only).

D - Near bank junction panel.

DS - Direct support (used in maintenance section only).

DS - Double story.

DSB - Double story bridge.

DSC - Double story center.

E - End of bridge (used in building/boom and de-launch tables).

E - Top panel next to near bank junction panel (bankseat beam side of junction panel).

ED - Erection double (pallet load).

EOB - End of bridge.

LIST OF ABBREVIATIONS (Cont)

ES - Erection single (pallet load).

ETP - End taper panel.

F - Top panel next to near bank bankseat beam.

F - Point on far bank indicating final position of far bank end of bridge.

F' - Point on near bank indicating final position of near bank end of bridge.

FB - Far bank.

FRB - Front roller beam.

FT or ft - Feet or foot.

G - Distance between point 0 and baseline (used in design only).

H - Far bank height at F relative to baseline (used in design only).

IN or in - Inch or inches.

JP - Junction panel.

Km/mp - Kilometers per hour.

L - Length of bridge.

LL - Long link.

LLN - Light launching nose.

LNH - Launching nose heavy.

LNL - Launching nose link.

LNR - Launching nose roller.

LR - Landing roller.

LRB - Launching roller beam.

LR/D - Long ramp/deck (pallet load).

LRP - Landing roller pedestal.

LRS - Link reinforcement set.

LZ - Landing zone

M or m - Meter or meters.

LIST OF ABBREVIATIONS(Cont)

MGB - Medium girder bridge.

mm - Millimeters.

mph - Miles per hour.

N - Nose tip height (used in design only).

NB - Near bank.

NCO - Noncommissioned officer.

NCOIC - NCO in charge.

O - Point indicating the end of dimension R (bridge constructing area).

P - Height of packing.

P1 - Deflection of overbridge.

P2 - Height of existing bridge above baseline through bearing points at ends of bridge.

pp - panel point.

PT - Post tensioning assembly.

R - Distance required to construct the bridge in a normal manner.

RB - Roller beam.

RBSB - Rear bankseat beam.

RRB - Rear roller beam.

SL - Short link.

SR/DC - Short ramp/deck curb (pallet load).

SS - Single story.

SSB - Single story bridge.

SSC - Single story center (pallet load).

SSE - Single story end (pallet load).

T - Tail Height.

TP - Top panel.

W - Distance of ETP from FRB/LRB for max. deflection (for design only)

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81		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

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1 Nov 80

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PENALTY FOR PRIVATE USE $300

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FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

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PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 5-5420-212-12	18 Apr 85	MEDIUM GIRDER BRIDGE (MGB) NSN 5420-00-172-3520

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C